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ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

OF THE

PROVINCE of ALBERTA

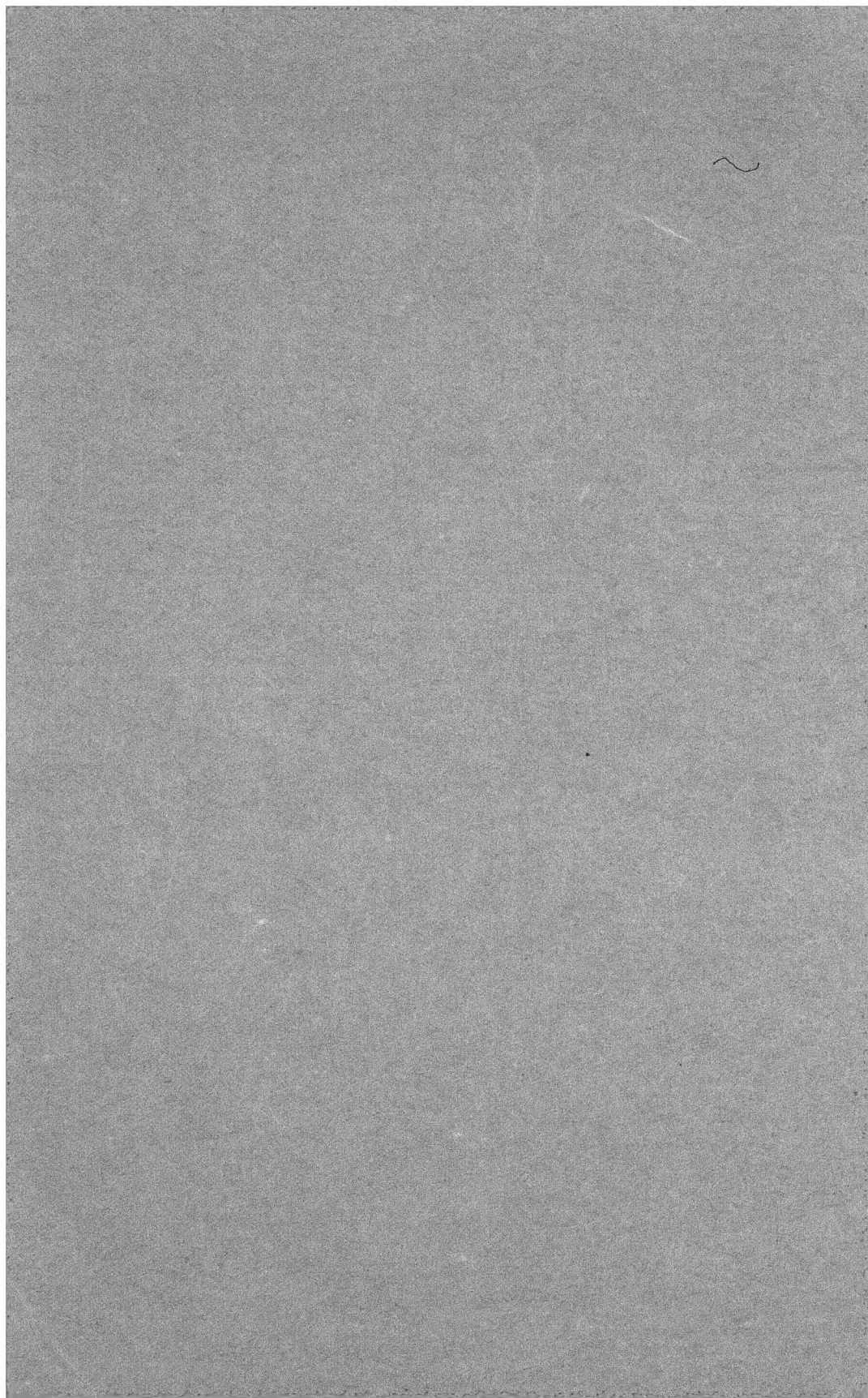
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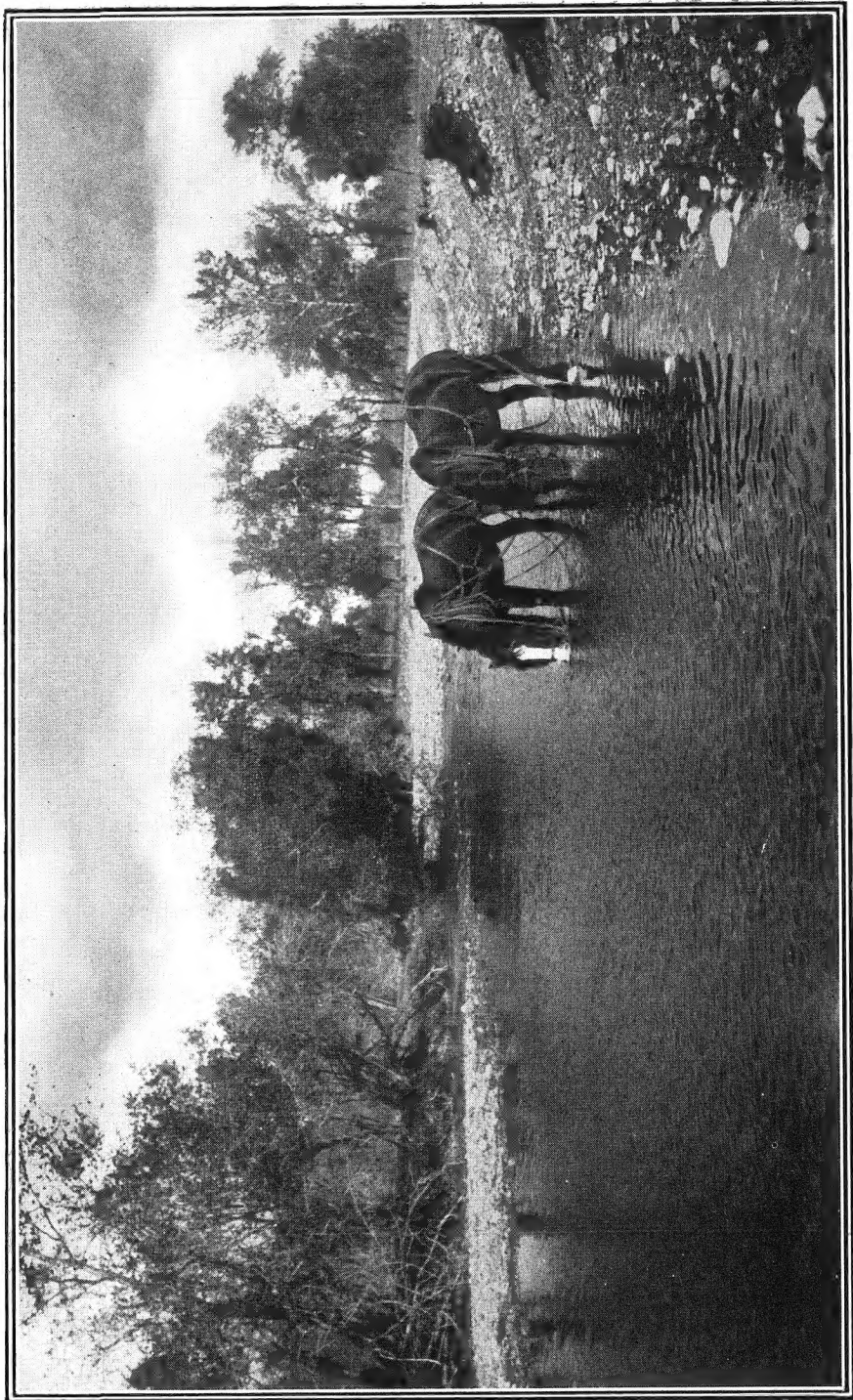
1921

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY



EDMONTON:
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1922





"THE SWEET LOOK THAT NATURE WEARS"

Alberta is watered to a large extent by streams having their source in the Rockies

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DEPARTMENT OF AGRICULTURE,
EDMONTON, DECEMBER 31ST, 1921.

TO HIS HONOUR

ROBERT GEORGE BRETT,

Lieutenant Governor of the Province of Alberta.

SIR,—

I have the honour to submit herewith the Report of the Department of Agriculture for the year 1921.

I have the honour to be, Sir,

Your obedient servant,

GEORGE HOADLEY,

Minister of Agriculture.

CONTENTS.

Report of the Deputy Minister.

Report of the Live Stock Commissioner.

Report of the Dairy Commissioner.

Report of the Provincial Veterinarian.

Report of the Superintendent of Seed and Weed Branch.

Report of the Poultry Commissioner.

Report of the Director of Demonstration Farms.

Report of the Superintendent of Fairs and Institutes.

Report of the Chief Game and Fire Guardian.

Report of the Superintendent of Women's Institutes.

Report of the Crop Statistician.

Report of the Recorder of Brands.

Report of the College of Agriculture.

Reports of the Schools of Agriculture.

Report of the Natural History Society.

Appendix to Report of the Live Stock Commissioner.

Appendices to the Report of the Crop Statistician.

DEPARTMENT OF AGRICULTURE.

Heads of Branches.

S. G. Carlyle, Live Stock Commissioner.

C. P. Warner, Dairy Commissioner.

P. R. Talbot, V.S., Provincial Veterinarian.

J. D. Smith, Supt. of Seed and Weed Branch.

J. H. Hare, Supt. of Poultry Branch.

D. Douglas, Director of Demonstration Farms.

Alex. Galbraith, Supt. of Fairs and Institutes.

B. Lawton, Chief Game and Fire Guardian.

J. Wilson, Brand Recorder.

Colin G. Groff, Publicity Commissioner and Editor of Publications.

Report of The Deputy Minister

HON. GEORGE HOADLEY,
Minister of Agriculture,
Edmonton.

Sir,—

I have the honour to submit herewith the fifteenth annual report of the Department of Agriculture.

The year just closed has been one of the most difficult which has been experienced by farmers of Alberta. Prices for most farm commodities have taken a serious drop. Unfortunately for farmers, the prices of the things which they have to purchase in the form of the necessities of life and the many things required in the operation of the farm have not correspondingly decreased in price. This situation has placed many of the people living in rural districts in a very difficult position. The policy of the banks generally has been to restrict loans. This has made the position of the farmer an exceedingly difficult one, the result being that farmers generally have been compelled to reduce the scope of their operations. The high freight rates prevailing have been another important factor in reducing possible profits. These freight rates have been lowered to some extent, but even yet are a heavy drain on the revenue of farmers, particularly those whose operations are confined to grain-growing.

There has been a general disposition to depart from the principle of large acreages of grain and to develop along mixed farming lines. This desire has been felt among settlers in all parts of the province, including both the extreme north and the extreme south. This is a principle which has been emphasized by the Department of Agriculture for some time. The high prices for grain during the war interfered with the progress of mixed farming, but with the return of lower prices for grain, farmers in all parts expressed a desire to secure some good foundation live stock, particularly dairy cattle, bacon hogs and poultry. There is little doubt that the mixed farming policy, if followed persistently, will result in a return of general prosperity to the province. It would appear that the dairy industry is due for a very great development. Enquiries continue to come from all quarters for breeding stock and officials of the Department who carry on educational work through the rural districts report that farmers are eager for information and particularly anxious for assistance along dairy lines.

MARKETING PROBLEMS

It is essential that some attention be paid to the marketing of farm products. The Department has rendered much valuable assistance in the marketing of butter, eggs, poultry and potatoes. These services have resulted in raising the standard of quality in these various commodities, of finding the best markets available and of returning an increased share of the ultimate value of the product to the original producer. The egg and poultry marketing service has handled a large

proportion of the output of the province. Heavy shipments of poultry, especially turkeys, were handled during the late fall. Twelve cars of poultry were exported from the province by the various local dealers and by the provincial marketing service. The raising of turkeys promises to be an important branch of the business. There seems to be an unlimited demand for dressed turkeys at a good price and the climate seems particularly suited to the raising of this kind of poultry.

A co-operative marketing association has been organized at the city of Edmonton. The direction of potato marketing has been placed in charge of J. H. Blake, Poultry and Egg Marketing Commissioner. A considerable amount of assistance and direction has been given to this first potato growers' organization. Prices for potatoes have not been high; however, this association has been able to secure a substantial increase in prices over that which was possible through any other avenue. The department hopes to develop the idea of co-operative potato marketing in other parts of the province during the coming year.

An important conference was held in Ottawa, where producers, packers, railway officials and officials of Dominion and Provincial Departments of Agriculture met to discuss the possibility of having hogs bought and sold on grade and of having a premium paid for select bacon hogs. This conference was a particularly successful one in that the packers agreed to buy on a grade basis, to pay a premium for select bacon hogs and to submit to the decision of a referee at all stock yards and abattoirs where any dispute arises between buyer and seller respecting the grading of hogs. Farmers in Alberta have shown a great interest in the hog business since the results of the conference were announced. There is no doubt that the hog population of the province will be very greatly increased during the coming season.

SOUTHERN ALBERTA

Portions of Southern Alberta have had another crop failure. This has meant that there will be a considerable amount of hardship during the coming winter. Arrangements have been made by the department to extend relief to settlers in the form of groceries, coal and feed for live stock. Agents have been placed in various parts of the country with instructions to receive applications from settlers in unorganized districts and if after investigation it is found that these settlers require relief, the same is to be dispensed by issuing orders on local stores. The department has also arranged for the purchase of a considerable amount of hay, green oats and alfalfa to be shipped to settlers who have not sufficient feed to care for their stock. Free freight on this feed has been arranged, with the Dominion, the railways and the province each bearing one-third share.

Immigration has received increased consideration during the past year. The legislation put into effect by the Government has been taken advantage of and many of the farmers throughout the south are eagerly looking forward to the prospect of having water within a reasonable time. There is no doubt that the development of irrigation will mean a very great deal to the solution of the problems of the south country.

The Survey Board for Southern Alberta has been appointed, and is expected to report early in the new year. The policy of the depart-

ment respecting Southern Alberta will naturally be influenced to a considerable extent by the recommendations contained in this report.

Four district agents have been operating throughout the season. These men have proven to be valuable in communities where they are located and many requests have been received by the department for an increase of the number of agents: it is hoped that this work may be expanded during the coming season.

The grasshopper plague was severe in the southern and central portions of the province. The department organized a campaign with a view to controlling this pest. The early part of the campaign was quite successful, but later on when the crops began to fail, farmers became discouraged and refused to spend more money in the protection of doubtful crops. Indications are that the eggs of grasshoppers are laid much more widely than ever before. It is the intention of the department to put on an energetic campaign covering the whole of the affected area in an endeavour to control, as far as possible, this very destructive plague. The department purchased the poison bait and distributed this locally through its agents.

The general crop conditions of the province were particularly favorable with the exception of the south and south-east portions of the province. Even in these districts, there were sections where good crops were harvested. The results of good cultivation were particularly noticeable in many instances, though weather conditions in certain parts were such that the production of paying crops was an impossibility. The great central and northern parts of the province were favored with a splendid crop. North of Edmonton also north-west and east from the city, very heavy crops were harvested. The season in the north was a very favorable one throughout, and as a result feed is quite plentiful. This is a fortunate condition owing to the fact that a considerable amount of this feed will be required in the south country. The general feeling throughout the province is hopeful, though at times many farmers have been somewhat discouraged on account of the low prices which have prevailed generally. Economy in production, improvement in the quality of products and lower freight rates together with better marketing facilities are the factors which will have the greatest influence on placing the farmer in the position which it is his right to enjoy.

It is very much to be regretted that the Publicity Commissioner, Mr. Jas. McCaig, died during the year. For several years, Mr. McCaig has rendered very valuable service to this department in his dual capacity as Editor of Publications and Publicity Commissioner. He brought to bear upon his work rare qualities which have meant much to the province during his time of service. His place has been taken by Mr. Colin Groff, late of the Calgary Albertan. Mr. F. G. Forster has also been employed in this branch; he will have charge of the statistical end of the department's work.

The reports of the heads of the branches are herewith given. These reports will explain in detail the activities of the department.

All of which is respectfully submitted.

((Signed)) H. A. CRAIG,
Deputy Minister.

Report of the Provincial Live Stock Commissioner

H. A. CRAIG,

Deputy Minister of Agriculture.

Sir,—I have the honour to submit herewith the report on the Live Stock Commissioner's Branch for the year 1921.

The conditions pertaining to the Live Stock Industry in the Province during the year 1921 gave cause for no small degree of alarm, particularly in regard to beef cattle.

During the year the United States Government thought it a wise move to impose a tariff on Canadian cattle entering the United States. The stockmen of Alberta looked upon the Chicago Stock Yards as their natural market, consequently prices paid here were based on prices obtained at that market. The imposition of the tariff forced the prices of Alberta cattle down so that producers were forced to sell their stock at a tremendous loss. The cattlemen being thus handicapped by the tariff turned their attention again to the British market for the solution of the problem confronting them. Notwithstanding the high rail and ocean rates and other incidental expenses entering into the shipping of finished beef cattle from Alberta to Great Britain, the trial shipments under such adverse conditions proved fairly satisfactory. The five consecutive dry seasons have had a serious effect on all classes of live stock in the Southern and Eastern sections of the Province. The farmers and ranchers on account of shortage of winter feed and summer range were compelled year by year to reduce their herds and flocks and during 1921 quite a number of them sold a large percentage of their breeding stock to British Columbia and American buyers at sacrifice prices.

CATTLE .

In the fall of 1921 the greatest slump in prices was experienced since the close of the war, for all kinds of grain as well as live stock, the classes most affected being horses, cattle and sheep. At the beginning of the year heavy finished steers brought around \$8.00 per hundred pounds; good butcher steers under 1,000 pounds, \$7.00; good butcher cows, \$6.50; good stockers, \$6.00, and good feeders, \$7.00. The top prices were paid in May, choice steers bringing from \$9.00 to \$10.00 per hundred pounds, the latter price for cattle purchased on contract.

From May, the market price for all grades started downward, until October when the market touched the lowest point, good, heavy, well finished steers selling for around \$4.00 per hundred pounds, good cows, \$3.00; good stockers, \$3.15, and good feeders, \$3.25. At the beginning of November, the market began to improve, and by the end of the year the prices paid for good animals went up to about \$1.00 per hundred pounds above October prices.

On account of the market for all kinds of dairy produce being firm throughout the year, there has been a strong demand for good dairy cows. We were in receipt of letters daily during the last three months of the year from intending purchasers to put them in touch with breeders of pure-bred animals of the dairy breeds, also of dual-purpose Shorthorn and Red Polls. The outlook is, on account of the low prices paid for grain, that the farmers intend going strong into the dairying industry, but this change should be tempered with caution. The future beef supply will have to be produced by the farmers who work their land on the Mixed Farming System, as the ranching industry is being replaced by the above method of farming.

The demand for pure-bred bulls at the Calgary and Edmonton Bull Sales last spring was not as keen as in previous years, due no doubt to the uncertain conditions of the cattle market. We have no report on the bull sale held at Lacombe this year. The following tables show the number sold and the average price obtained for bulls of the different breeds.

EDMONTON BULL SALE

Breed	No. Entered.	No. Sold.	Value.	Average
Shorthorn	161	120	\$20,870.00	\$173.92
Aberdeen-Angus	51	30	4,165.00	138.83
Hereford	33	16	3,175.00	198.44
Galloway	1	..	.....	.....
Holstein	4	4	425.00	106.25
Ayrshire	2	2	380.00	190.00
	252	172	\$29,015.00	\$168.69

The average price at the bull sale held at Edmonton, 1920, was \$256.60, against \$168.69 for 1921, a drop of \$87.91 per head.

CALGARY BULL SALE

Breed.	No. Sold.	Value.	Average.
Aberdeen-Angus	63	\$ 6,940.00	\$110.00
Hereford	196	26,905.00	137.27
Red Polled	3	420.00	140.00
Shorthorns	197	39,480.00	200.40
	459	\$73,745.00	\$160.65

The average price at the bull sale held at Calgary, 1920, was \$287.85, against \$160.65 for 1921, a drop of \$127.20 per head.

SUMMER CATTLE SALE, CALGARY, MAY 27TH, 1921.

Bulls.	No.	Value.	Average
Aberdeen-Angus	5	\$ 440.00	\$ 88.00
Hereford	39	4,710.00	120.80
Shorthorn	41	6,595.00	160.85
Total Bulls	85	\$11,745.00	\$138.18
Cows.			
Aberdeen-Angus	2	\$ 125.00	\$ 62.50
Hereford	13	2,050.00	157.70
Shorthorn	10	690.00	69.00
Total Cows	25	\$2,865.00	\$114.60

DEPARTMENT OF AGRICULTURE

OCTOBER SALE OF DAIRY CATTLE

Calgary, October 25th to 27th, 1921.

	No.	Value.	Average.
Holstein bulls	33	\$ 375 000	\$8 225 000
Holstein cows	111	1,840 000	16 571 277
Total	144	\$2 215 000	\$8 588 222

HORSES

Horses have perhaps never been lower in price, but notwithstanding the dullness of the local market, there has been a demand for both heavy and light horses from the outside. In April, we had an enquiry from a gentleman in Ront off Spain, Trinidad, West India Islands, wishing to purchase light horses weighing around 900 pounds. A description of these horses and prices were sent, and in June an order was received for two carloads. These were purchased by the Department, one load leaving Calgary on July 9th and another on July 23rd. The average cost price was \$388 000, but the transportation charges were very heavy, and when they arrived at destination the average cost had risen to \$1766 000. These horses sold around \$2000 000 each so the experiment was not a failure, but the transportation charges were so high and the risk too great to warrant any more shipments at present.

EDMONTON PURE-BRED HORSE SALE

April 15th, 1921.

Breed.	No. Entered.	No. Sold.	Value.	Average.
Stallions—				
Clydesdales	21	44	\$1,205 000	\$801 225
Percherons	77	.....	.....	.....
Belgians	22	.....	.....	.....
	300	44	\$1,205 000	\$801 225
Mares—				
Clydesdales	44	22	\$ 750 000	\$375 000
Percherons	22	11	325 000	325 000
Belgians	66	33	\$1,075 000	\$838 333

SHEEP

The price of breeding sheep has been lower than for some years, however, quite a number have changed hands and some new flocks have been established; the price of wool has also been low, but this may have a beneficial effect on the industry as more attention will be paid to the mutton types. There is a good market for lambs of the mutton type, well covered, weighing between 75 and 80 pounds in Vancouver and Victoria.

Upon investigating it was found that this market consumed annually about 1200 000 lambs a year, Alberta and British Columbia together supplied about 200 000, and the remaining 1000 000 was supplied chiefly from Seattle and Portland, a small amount coming

from New Zealand. A duty was paid on these lambs from the United States amounting to three cents a pound on the carcass, and 25 per cent. off the price live weight.

This market rightfully belongs to the Prairie Provinces, and a preference would be given Alberta sheep owners if they would supply the right type, weight and finish, and would ship a continuous supply throughout the year. The packers would much prefer to ship in live lambs and kill them in their own plants, thus keeping their plants running, rather than bringing in dressed carcasses from the United States.

The sheep population of the Province is over half a million, and there is no doubt but that there will be a steady increase from this time forward.

A sheep sale was held in Calgary on October 25th to 27th, and the following animals were sold at prices below the 1920 sale.

Breed.	No.	Amount.	Average.
Suffolk Ewes	166	\$ 226,000	\$141.13
Suffolk rams	110	229,000	229.90
Oxford ewes	223	218,000	90.55
Oxford rams	310	563,500	181.78
Shropshire rams	331	488,000	157.76
	1110	\$1,714,500	\$155.50

The average price for sheep at the Calgary sale, 1921, was \$25.95, against \$15.50 for 1921, a drop of \$10.00 per head.

HOGS

The hog situation in the Province has greatly improved. A year ago we were not raising enough hogs for our own consumption, now we have a surplus. The pig population has doubled the past year, and we must look for an outside market; that market is the British market, and the demand is for the bacon type of hog to supply the Wiltshire sides. At present there is only about 8% of the hogs in Alberta of the bacon type. For the home market and the British Columbia market the smooth, fat hog commands as high a price as the bacon hog, but there is little demand for them on the British market, so that unless our surplus is of the bacon type we shall be driven from that market, and shall have to take a much lower price for our product. The Canadian meat packers and Federal and Provincial Government officials recognizing this fact called a conference and met at Ottawa in November, and decided that a grading system be established and all hogs brought on public stock yards and at abattoirs be brought on grade and that a representative of the Federal Government be appointed at each of these places to act as a referee between buyers and sellers, and that a premium of 10% be paid for select bacon type hogs weighing between 160 and 210 pounds. This was done to encourage the farmers to raise the type of hogs the market demands.

There was no swine sale held in Edmonton during 1921, but a few males and females were listed with the secretary in connection with the

sheep that were offered for sale by this method. The only breeds offered for sale were Berkshires and Duroc-Jerseys.

The swine sale was held in conjunction with the dairy cattle and sheep sale in Calgary on October 25th to 27th, 1921, and the following table shows the animals sold and the average price obtained for the different breeds.

Breed.	No.	Value.	Average.
Duroc-Jersey, females	2	\$ 64.00	\$32.00
Duroc-Jersey, males	5	80.00	16.00
Yorkshire females	2	72.00	36.00
Yorkshire males	8	180.00	22.50
Berkshire females	15	461.00	30.73
Berkshire males	25	587.00	23.48
	57	\$1,444.00	\$25.33

Respectfully submitted,

S. G. CARLYLE,

Live Stock Commissioner.

Report of the Dairy Commissioner

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I have the honour to submit herewith the report of the Dairy Commissioner's Branch for the year ending December 31st, 1921, under the following heads:—

- I.—General.
- II.—Creameries and Cheese Factories.
- III.—Marketing of Creamery Butter.
- IV.—The Department's Butter-Grading Service.
- V.—Instruction Work.

I.—GENERAL.

The statistical data given below show that the dairy industry of the province continues in a healthy condition. The Dominion statistician reports 423,838 dairy cows in Alberta during the year. This is an increase of thirty-eight per cent. over the figure given for 1920. Since comparatively few dairy cows were imported into the province during the year this increase must be due to heifers in their first lactation period as well as a number of cows formerly classed as beef animals being added in the count of dairy herds; for this reason the annual milk production did not increase in the same ratio as the number of milk cows. As nearly as I can estimate and using all available statistical material the average milk production per cow in Alberta was approximately 3,100 pounds for the year 1921.

The increase in the production of creamery butter was approximately six per cent., and the output of factory cheese was one hundred and forty per cent. greater than that of 1920, being the highest annual output since 1917. The prospects are that the cheese production will increase materially from now on.

The prices of all dairy products declined to a marked degree during the year. In the case of creamery butter, the average selling price at the creameries ($36\frac{1}{2}$ c. per lb.) was thirty-five per cent. under that of 1920, though still thirty-six per cent. above the selling price of creamery butter for 1915. This figure (thirty-five per cent.) may, I think, be taken as representing the average price depreciation of all our dairy products, and it is upon that basis that the total annual value is being estimated.

DAIRY STATISTICS, ALBERTA

(1) *Milk Cows on Farms:*

Year		Cows	Per Farm	Value of Cows	Each
1901	(Census)	46,101	4.9	\$1,734,942	\$37.63
1906		101,245			
1911	(Census)	147,649	2.4	6,368,546	43.13
1912		157,922			
1913		168,376			
1914		179,068			
1915		183,974			
1916	(Census)	284,895	5.6	18,008,737	63.21
1917		325,861		29,083,000	89.00
1918		328,702		30,569,000	93.00
1919		336,596		29,957,000	89.00
1920		305,607		21,698,000	71.00
1921		423,838		29,668,660	70.00

(22) *Total Annual Value of Dairy Products:*

19000	(Census)	\$ 5346476
1910	(Census)	7,855,751
1915	(Census)	15,895,586
1916	(Estimated)	18,466,311
1917	(Estimated)	24,794,597
1918	(Estimated)	27,500,000
1919	(Estimated)	31,625,000
1920	(Estimated)	34,000,000
1921	(Estimated)	25,500,000

(33) *Creamery Butter Production:*

Year	Creameries	Ills. of Butter		Selling Value per lb. cents
1912	533	33,010,755		
1913	499	44,115,587		
1914	444	55,444,866		
1915	557	71,594,118	\$2,021,448	(226,795)
1916	557	88,521,784	2,619,248	(307,836)
1917	666	88,944,171	3,414,541	(381,176)
1918	566	99,053,237	4,025,851	(444,669)
1919	533	111,822,890	6,182,739	(51,897)
1920	533	111,821,291	6,555,509	(55,445)
1921	444	12,525,000 (Est.)	4,572,000	(66,55)

(44) *Factory Cheese Production:*

Year	Cheese Factories	Ills. of Cheese		Value per lb. cents
1912	66	400,000		
1913	77	707,156		
1914	55	705,881		
1915	113	3,841,632	\$ 668,441	(17,923)
1916	115	7,465,122	1,544,653	(20,783)
1917	220	11,274,905	2,801,885	(21,977)
1918	111	5,522,834	1,809,111	(23,668)
1919	100	5,205,500	1,465,161	(27,99)
1920	77	3,987,730	1,103,555	(27,77)
1921	100	9,600,000 (Est.)	2,151,225	(22,55)

DAIRY LEGISLATION

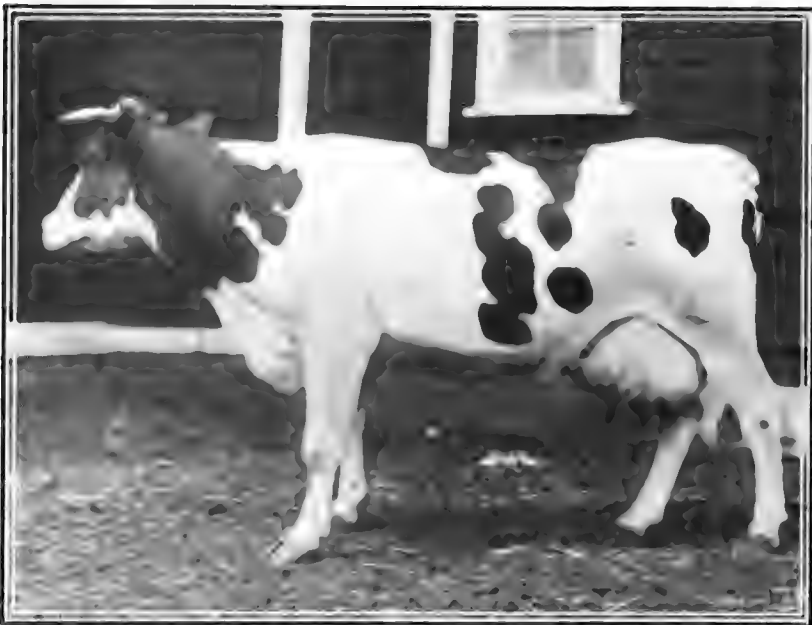
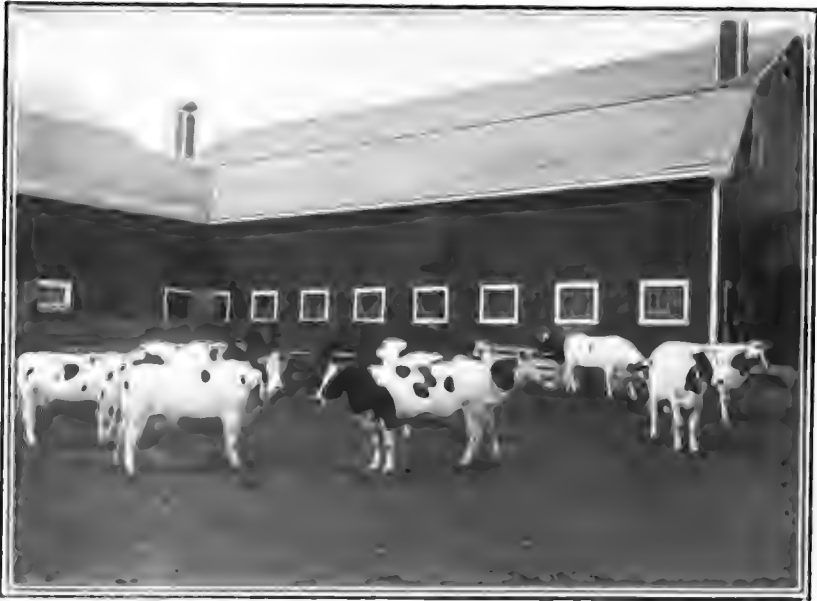
A few important amendments were made to the Dairyman's Act during the 1921 session of the legislature for the purpose of establishing certain uniform principles in the marketing of milk, cream and butter-fat.

11. Section 2 of the Act was amended by adding as paragraph (ii) of subsection 6 the following:

"(ii) Any person purchasing cream from a patron for consignment or resale for manufacturing purposes shall be deemed to be the agent for that purpose of any creamery which thereafter buys or receives such cream, and the place at which such person carries on his cream business shall be a cream station and a branch of any such creamery, within the meaning of this Act."

The purpose of this extension to the definition of "cream station" was to make all forms of cream buying subject to the provisions of the Dairyman's Act and the regulations passed thereunder.

A DAIRY HERD WITH A RECORD



These are views of the famous Alberta Government's herd of Holsteins at the Stony Plain Demonstration Farm, conceded to be one of the finest herds in the Dominion. In the herd of 16 cows, three have records of production of 100 lbs. milk each in one day. Six of the cows are showing a combined production now of from 480 to 500 lbs. of milk daily.

2. Subsection 2 of section 40 was amended by the insertion of the word "butter-fat test." It now reads:

"(2) No owner, operator, manager or other person in charge of any creamery, cream station or cheese factory, shall, in respect of any lot of milk or cream purchased from a patron, base the purchase price upon a weight, butter-fat test, grade or classification other than the correct weight, butter-fat test, grade or classification."

3. Section 46 was amended and now reads as follows:

"46. Any association, corporation, company, person or firm engaged in the business of buying milk, cream or butter-fat for the purpose of manufacture who shall discriminate between different persons, sections, localities, communities, towns or cities of the province by purchasing such commodities at a lower price or rate from one person or in one section, locality, community, town or city, than is paid for the same commodity by the said association, corporation, company, person or firm to another person or in another section, locality, community, town or city, after making due allowance for the difference, if any, in the grade or quality, and the difference in the cost of transportation paid by such association, corporation, company, person or firm on such commodities from the point of production to the point of manufacture and on the manufactured product or products from the point of manufacture to the nearest railway station or to the point of consolidation for final shipment, shall be deemed guilty of unfair discrimination, and upon summary conviction thereof, shall be punished by a fine of not less than \$50.00, nor more than \$500.00."

LICENSES AND PERMITS

Forty-nine licenses were issued in Form "C" to operators of creameries and cheese factories, and three hundred and thirty-four licenses were issued to operators of cream stations.

One hundred and fifty-nine permits were issued to applicants for Cream Testers and Graders' licenses, who furnished references as to their competency. Of these applicants one hundred and forty-nine attended and passed the required practical and written examination, while in ten cases the permits were revoked on account of the holders failing to appear and qualify. One license in Form "B" was suspended for 30 days.

At the close of the year, four hundred and forty-one licenses had been issued in Forms "A" and "B" to testers and graders of cream. Two hundred and ninety-two of these were renewals and the remaining one hundred and forty-nine licenses were issued following the satisfactory examination of the applicants.

The total revenue from license fees paid in during the year amounted to \$2,997.00, as compared with \$3,404.00 for the previous year.

PROSECUTIONS

The department's dairy inspectors found it necessary to lay information against a number of licensees for violation of provisions of

the Dairymen's Act and regulations. Seventy-seven charges were prosecuted and disposed of as follows:

Pleaded guilty—fines imposed	43
Pleaded guilty—suspended sentence	1
Adjudged guilty—fines imposed	19
Adjudged guilty—suspended sentence	3
Withdrawn	4
Dismissed	7
	77

The number and character of the charges is summarized in the following statement. Reference is also made to the sections of the Dairymen's Act and Regulations under which they were laid.

CHARGES	The Dairymen's Act	Regulations under the Dairymen's Act
2 Incorrect marking of sample containers		Sec. 15
37 Incorrect grading of cream	Sec. 40	
10 Incorrect test of cream	Sec. 40	
17 Failing to hold samples		Sec. 17
8 Incomplete daily record		Sec. 16
1 Unauthorized grade descriptions		Sec. 12
1 Incomplete statement to patrons	Sec. 35	
1 Testing without License	Sec. 45	
77		

TRANSFER OF OFFICE TO EDMONTON

The Dairy Commissioner's office was established at the City of Calgary on the 1st of May, 1906, and continued there until the 1st of August, 1921, when it was transferred to Edmonton for departmental convenience. We were fortunate, however, to retain the whole staff, and the move was made at our busiest time of the year without any serious break or disturbance in the business routine of the office.

II.—CHEESE FACTORIES AND CREAMERIES.

There were 5 cheese factories, 4 combined cheese factories and creameries, and 40 creameries in operation in the province during the year 1921.

Compared with the previous year's operation, there was an increase of three cheese factories, but a decrease of one combined cheese factory and creamery and eight creameries.

P. Burns & Co., Ltd., Edmonton, established a cheese factory in connection with their Edmonton plant, and the Edmonton City Dairy, Ltd. established new cheese factories at Millet and Leduc in order to handle the steadily increasing quantity of milk produced in those localities. A new creamery was established and put into operation at Bashaw.

The Crystal Dairy, Ltd., Didsbury, and the C. P. R. Demonstration Farm at Strathmore discontinued the manufacture of creamery butter and the creameries that have been operating at the following points did not re-open during the year, namely: Bowden, Pine Lake, Carmangay, Ferintosh, Northern (Edmonton), Innisfail, Youngstown and Claresholm.

III.—BUTTER MARKETING SERVICE

Tables I. and II. following indicate the quantity of butter that was handled through the Department's marketing service for a number of creamery operators during the winter season 1920-21, and the summer season of 1921. The selling price of the butter is given in each case. The somewhat wide variation shown in the average selling price of the butter handled from different creameries calls for an explanation.

The regulations under which this service is available to any creamery operator of Alberta leaves it open to him to sell a part of his butter direct to the trade whenever he chooses. In some of the cases under consideration, butter was shipped to the department's marketing service for only a part of the season, and in varying proportions of the total output. Each participating creamery received the actual price at which its butter was sold, after the charges for grading, freight and cold storage had been deducted. The selling price in each case was determined by the grade (quality) of the butter and the current market price obtainable for each grade as at time of sale.

The percentage and average selling price of each grade of the butter handled by the marketing service during the past summer season is shown in the following table.

Grade	Per cent.	Price per Pound
Special	6.66	37.9 cents
First (40)	31.00	36.33 cents
(39)	36.18	33.55 cents
Second	24.91	32.28 cents
Off Grade	1.25	31.62 cents
Total and Average	100.00	34.36 cents

Since the difference in the grade of creamery butter is very largely due to defective quality of the cream as received at the creameries, it is apparent that large losses are sustained by the industry on that account.

TABLE I.—SUMMARY OF BUTTER SALES, WINTER SEASON, 1920-21

Creamery or Shipper	Pounds of Butter Sold	Selling Price at Calgary	Average Price per Pound Cents
The D. Morkeberg Creamery Co. Limited			
Elnora	5,824	\$ 2,928.24	50.28
Innisfail	616	299.60	48.64
Markerville	13,944	7,077.28	50.75
Red Deer	1,736	867.44	49.97
Lacombe	8,733	4,358.63	49.91
Viking Co-Operative Creamery Association	13,541	6,741.85	49.79
The Beaver Lake Co-Operative Creamery Association, Ltd., Ryley	1,512	748.16	49.48
The Hanna Creamery, Hanna	19,768	9,737.84	49.26
A. E. Kofoed, Coronation	31,560	15,566.39	49.32
Totals and Average	97,234	\$48,325.43	49.7

TABLE II.—SUMMARY OF BUTTER SALES, SUMMER SEASON, 1921

Creamery or Shipper	Pounds of Butter Sold	Selling Price at Calgary and Edmonton	Average Price per Pound Cents
The D. Morkeberg Creamery Co., Limited			
Elnora	27,013	\$ 9,569.65	35.43
Markerville	42,112	15,779.96	37.47
Red Deer	18,739	6,945.56	37.06
Lacombe	27,682	10,252.51	37.04
Red Deer Creamery, Red Deer	3,024	1,080.24	35.72
J. P. Krause, Sundre	6,550	2,097.89	32.03
Viking Co-Op. Creamery Assn., Viking	100,939	34,389.17	34.07
Beaver Lake Farmers' Co-Operative Creamery Association, Ryley	20,075	5,933.44	29.56
Hanna Creamery, Hanna	137,998	46,552.36	33.73
A. E. Kofoed, Coronation	143,126	48,245.76	33.71
Tofield Creamery, Tofield	5,642	2,034.98	36.07
Bashaw Creamery, Bashaw	24,895	8,507.21	34.17
Wainwright Creamery Co. Ltd., Wainwright	79,201	28,129.49	35.52
Lochearn Creamery Co. Ltd., Lochearn	35,227	11,543.50	32.77
Valhalla Co-Op. Creamery Assn., Valhalla	55,216	19,015.78	34.44
Enterprise Dairy, Ltd., Edmonton	27,474	9,319.87	33.92
Totals and Average	754,913	\$ 259,397.37	34.36

THE MOVEMENT OF PRICES

In the department's annual report for 1919 and 1920 I submitted tables of figures giving the average selling prices of creamery butter for each year commencing May, 1914. While the figures are to a considerable extent based upon the records of the department's butter marketing service, they may be regarded as relatively representative of the average selling price of all creamery butter made in the province. While the figures for last year, compared with the others, do not make pleasant reading to the producers of dairy products, the following tables furnish material for an interesting study in the movement of prices of creamery butter for a series of years:

TABLE III.

Winter Season	Cents per pound at Calgary	Annual increase shown on a percentage basis.					
		1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
1914-15	27.68	100.00					
1915-16	33.20	119.94	100.00				
1916-17	40.5	146.33	122.00	100.00			
1917-18	45.57	164.63	137.26	112.50	100.00		
1918-19	50.39	182.04	151.78	124.40	110.58	100.00	
1919-20	64.65	233.56	194.73	159.61	141.87	128.30	100.00
1920-21	49.7	179.55	149.7	122.71	109.06	98.63	76.87

For the purpose of comparison a separate set of figures is given in Table IV., in brackets, showing the average selling price of all creamery butter in Alberta for each calendar year, and as reported by the Dominion Statistician.

TABLE IV.

Summer Season	Cents per pound at Calgary	Annual increase shown on a percentage basis.						
		1914	1915	1916	1917	1918	1919	1920
1914	25.87	100.0						
1915	27.18	105.1	100.0					
	(26.795)		(100.0)					
1916	31.49	121.7	115.9	100.0				
	(30.736)		(114.7)	(100.0)				
1917	39.56	152.9	145.5	125.6	100.0			
	(38.176)		(142.5)	(124.2)	(100.0)			
1918	45.30	175.1	166.7	143.9	114.5	100.0		
	(44.469)		(166.0)	(144.7)	(116.5)	(100.0)		
1919	53.51	206.8	196.8	169.9	135.3	118.1	100.0	
	(51.87)		(193.6)	(168.8)	(135.9)	(166.6)	(100.0)	
1920	53.53	206.9	196.9	170.0	135.3	118.2	100.0	100.0
	(55.45)		(206.9)	(180.4)	(145.3)	(124.7)	(106.9)	(100.0)
1921	34.36	132.8	126.4	109.1	86.8	75.8	64.2	64.2

IV.—THE GRADING OF CREAMERY BUTTER

Following the practice of former years, I present a summary of the grading of creamery butter by the department's official graders at Calgary and Edmonton during 1921. The corresponding figures are also given for the period stated in each of the six preceding years. Tests for moisture contents and pasteurization are made of every lot of butter passed through the grading stations, as no official grade certificate is issued on any lot of butter which contains more than 16 per cent. of moisture or which has been made from unpasteurized or ineffectively pasteurized cream. This is done for the information and protection of both the manufacturer and prospective buyer of the butter. As to the attitude of the man in the wholesale produce trade towards the official butter-grading services, may I be permitted to quote here a letter received from the secretary of the Fruit and Produce Credit Association, of Vancouver, B.C., dated August the 5th, 1921, which reads as follows: "At a meeting of the wholesale produce trade held to-day, it was unanimously agreed that all creamery butter purchased by members of this trade must be 'Government Graded' and be accompanied by certificates."

"And that a copy of this resolution be forwarded to the various creameries throughout the northwest."

■ In closing this section of my report, I desire to commend the conscientious and capable services of Mr. J. R. Flan and E. W. Light, butter-graders in charge of the grading stations at Calgary and Edmonton respectively. The work that has been committed to their care calls for expert knowledge, well defined ideas of grade standards, as well as the exercise of good judgment. The department's butter grading service has, so far as I know, proved uniformly satisfactory to the butter buyers and with but few exceptions, to the creamery operators as well. This fact bears testimony to the good work done by the graders.

SUMMARY OF THE GRADING OF CREAMERY BUTTER

Season	Cream- eries	Lots Graded	Representing in Pounds	Special Grade %	First Grade %	Second Grade %	Off Grade %
1915 (6 months)	35	6,203	3,600,900	33.0	39.7	24.3	3.0
1916 (6 months)	35	6,953	4,214,312	43.9	41.7	12.9	1.5
1917 (6 months)	37	7,046	4,644,646	56.3	36.3	6.7	.7
1918 (6 months)	36	7,281	5,427,134	50.4	38.6	10.3	.7
1919 (6 months)	44	8,939	6,830,308	29.7	50.8	18.9	.6
1920 (12 months)	45	8,512	6,120,325	19.0	55.6	24.7	.7
1921 (12 months)	42	8,378	5,954,991	7.7	66.7	24.7	.9

INSTRUCTION WORK

As in former years, members of the staff of this branch were assigned to undertake the instruction in dairying at the several Provincial Schools of Agriculture. Messrs. H. S. Pearson and J. H. Thompson, at the Olds School; Mr. W. J. Beckett, at Youngstown and Gleichen; Mr. A. N. Macdonald, at Claresholm (assisting Mr. Pearson) and afterwards at Raymond. Mr. Geo. W. Scott was at Vermilion. These men also assisted the writer in the dairy short courses which were conducted at the Department of Dairying, University of Alberta, and at the Central Creameries, Ltd., Calgary, in the months of March and April. The provincial dairy inspectors spent the greater part of their time during the summer among the creameries and cream stations in the province, giving such assistance to those in charge as the occasion required. They also undertook the prosecution of violations under the Dairymen's Act and regulations, already referred to in this report.

Early in the year the University of Alberta established the Department of Dairying in the Faculty of Agriculture, and the writer was appointed professor in charge of the new department. A temporary laboratory was equipped for conducting classes in home dairy and creamery buttermaking. A course of lectures was given to the seniors in the Faculty of Agriculture and short courses were conducted for creamery buttermakers, field men and cream station agents. Examinations were put on for those who desired to qualify for cream graders and testers' license.

Respectfully submitted,

C. P. MARKER,

Dairy Commissioner.

Report of the Provincial Veterinarian

H. A. CRAIG,

Deputy Minister of Agriculture.

Sir,—I have the honour to submit herewith the annual report of the Provincial Veterinarian's Branch of the Department of Agriculture for the year 1921.

The work of the branch is concerned with general conditions relating to the health of the stock in the Province, the supervision of the health and care of the live stock kept on the demonstration farms, assisting the farmers and ranchers in the prevention and eradication of those diseases which do not come under the Animal Contagious Diseases Act of the Dominion Government, and educational work relating to diseases of live stock.

EDUCATIONAL WORK

At the Schools of Agriculture lectures are given on veterinary science during the school term, the subjects taught deal with the care and treatment of sick animals; the different methods of treating wounds, such as barb-wire cuts; and subjects relating to parturition, care of foals and foal troubles. The instruction in this work at the different Schools of Agriculture, viz.: Olds, Claresholm, Vermilion, Raymond, Gleichen, and Youngstown is given by the following veterinary surgeons: Drs. Moore, Buchanan, Moon, Haworth and Kerr. In addition, lectures relating to contagious diseases found in this province and material gathered through experimental work carried on by this branch, are given at each school by the Provincial Veterinarian.

Instruction on veterinary science is given also to the two senior classes of agricultural students attending the College of Agriculture, University of Alberta. These lectures are along similar lines to those given at the Schools of Agriculture, but are more advanced and deal more fully with methods which will assist in the prevention and eradication of disease affecting live stock in the province. We have held a considerable number of meetings in different parts of the province during the past year, the majority of them being in districts where the services of a qualified veterinary surgeon could not be obtained. By instruction of this kind many local outbreaks of disease have been stamped out and assistance made possible, which we trust will do much to improve the live stock of the country.

LIVE STOCK DISEASES IN THE PROVINCE

Gastro-enteritis

This disease affecting cattle only, described fully in our 1919 report and again mentioned in that of 1920, is still causing considerable loss. There seems to be a great deal of confusion in the diagnosis of the trouble and on account of its similarity to Hemorrhagic Septicemia many letters are forwarded to this office reporting losses from the latter source. It would therefore seem advisable to bring to your attention any additional information which may be attainable.

Occurrence.—The disease usually occurs about the 1st of October and disappears before January 1st. It apparently is not due altogether to scarcity of pasture or poor food for upon investigation many premises are found to have excellent forage and good running water.

Distribution.—Up to the present the cases are confined principally to the northern and central part of the province. It appears in a sporadic form, but only in exceptional instances do a large number of animals in one herd become affected. Many of our reports show where only one animal in a herd went down with the disease, but usually several animals become affected almost simultaneously. From the history of these cases it would indicate that outbreaks take place where it seemed impossible that contagion could have been carried and there are many things that would indicate that it is not as contagious as many suppose.

Susceptibility.—Cattle of any age may become affected, but the disease is most frequently met with in yearlings and two-year-olds. Young calves seem to be the least susceptible, and, in fact, it rarely occurs until the animal reaches the age of one year.

Symptoms.—The animal may be affected very suddenly, death often resulting in a few hours. Other cases linger for possibly two weeks before dying. In acute types of the disease the temperature may be very high, frequently registering 106-7. There is well marked depression, general weakness, suppression of appetite and considerable emaciation, the ears droop, the muzzle is dry, staring coat, loss of rumination, the passages are hard and often coated with mucus or blood. The characteristic symptom is the bloody diarrhoea which sets in towards the termination of the disease.

Pathological Examination.—The primary seat of the disease appears to be in the fourth stomach and intestines where a well marked inflammatory condition is noticed. Occasionally these areas extend through the intestinal wall showing red discolorations on the outside.

Treatment.—We have nothing new to offer in the way of treatment which has not been submitted previously with the exception that the inoculation of Hemorrhagic Septicemia Vaccine in some cases appears to assist recovery. How this particular vaccine should have any beneficial effects I am not prepared to say. We have obtained the best results by placing the animal in good warm quarters, free from dampness. The administration of linseed tea, boiled milk, oatmeal gruel or rice water all aid in effecting a cure. Tannic acid in one-dram doses three times a day has given good results. Tincture of catechu, one dram three times a day, has given good success in some cases only. Hydrochloric acid in teaspoonful doses in one pint of water was tried. Subnitrate of bismuth, one to two drams, was also recommended, but both these drugs failed to give the results of the tannic acid treatment. From the data we have kept of this particular disease, it would appear that a large proportion of the cases should recover if they are properly housed and treated with the remedies suggested.

Blackleg

We take pleasure in reporting that the loss from Blackleg is gradually decreasing. The Schools of Agriculture which are keeping

a supply of vaccine constantly on hand have aided considerably in controlling and eradicating this disease. The convenience of securing the vaccine and the fact that its use is continually advocated to the students attending these schools is steadily increasing the demand for it. The Aggressin Blackleg Vaccine has become popular throughout the province. The apparent marked immunity following its use has induced us to recommend it upon every opportunity. So far no bad results from its use have been reported. One dose is sufficient to protect almost indefinitely cattle four months old or over.

Typhoid Influenza

This disease, which affects horses only, has given us considerable anxiety during the past year and at times apparently assumed an epizootic form in certain localities, marked on account of the confusion of this disease with swamp fever. The following information may be useful.

Distribution.—During the summer of 1921 the outbreaks for the most part occurred in Edson, Fort McMurray and Cold Lake Districts and were the worst we have experienced for some years.

Symptoms.—The disease usually appears suddenly and may attain its greatest point of intensity within twenty-four hours. The respiratory organs were in practically all cases the ones affected, but occasionally the circulatory, digestive, muscular and nervous symptoms were shown. An elevation of temperature ranging from 101 to 107 was always present. Usually there was partial loss of appetite, marked depression and a rapid pulse running from 50 to 70 beats per minute. The symptom which misled many and caused the supposition that it might be swamp fever was the fact that many cases showed variation of temperature often staying about 104 to 105 for five or six days, then dropping suddenly to 101, or even lower, where it would remain for perhaps a week, only to suddenly increase again. The disease should run its course in seven to fourteen days, but many cases extended into several weeks, which was a most uncommon symptom heretofore.

Treatment.—On account of the many complications arising the treatment for animals suffering from this trouble should be in the hands of a competent veterinary surgeon, if possible. Much can be done in the way of prevention and control by carefully isolating the animals affected. The careful inoculation of all horses, in an infected herd, with anti-influenza serum cannot be recommended too strongly. We have found that this serum has an excellent preventive as well as a curative action and many severe cases made a complete recovery under this treatment.

EXPERIMENTAL WORK

The experimental work on contagious abortion and on sterility affecting cattle has not progressed as rapidly as I wished. To carry on research work of this kind it would necessitate the expenditure of some considerable amount of money and the facilities to carry on experiments in connection with contagious abortion were not available. Through the kindness of Mr. G. H. Hutton, Superintendent of the

Agricultural and Animal Industry Branch of the Canadian Pacific Railway, Department of Natural Resources, Calgary, however, the sterile cows on the C. P. R. farm at Strathmore were still left at my disposal, which enabled me to prolong investigation into this line of work. Dr. T. B. Harris, C. P. R. veterinarian, stationed at Strathmore, has given me valuable co-operation and assistance, making it possible to keep data relating to every cow at this station. The difficulty now is to get more material to carry along work which we started last year, as practically all animals treated made a complete recovery.

For the benefit of those having losses from contagious abortion, I am summarizing the treatment we have followed out during the past two years. There are a few variations from that suggested previously but the main points are the same. I am satisfied that if the treatment as directed is followed closely, the disease can be safely and effectually combatted.

Treatment of Contagious Abortion.—The following measures of control and eradication can be recommended.

1. The isolation of the sound from the diseased as far as possible.
2. Disinfection of the stables, especially of the stanchions, floors, gutters and passage ways.
3. Cleansing the vulva and neighboring parts from accumulations of discharges.
4. The careful disinfection of the cervical canal of cows which have aborted, at least once a day with *one-quarter of one per cent. (0.25%) Lugol's solution* until all discharges have ceased.
5. When the cow comes in heat regularly the cervical canal is washed daily for two days before and three days after coming in season with a 0.25% Lugol's solution. Again, in eighteen days, the same process is repeated. When bred, she is washed daily for twenty-one days with the same solution, and so far practically every cow has carried her calf to the full term of pregnancy.

Each pregnant cow should be carefully observed and should any signs of threatened abortion appear she should be isolated immediately.

The vulva, tail and neighboring parts of all exposed cows should be washed daily for at least two weeks with antiseptics, such as 3% solution of carbolic acid or creolin, or a 1-1000 solution of corrosive sublimate.

The bull should be regarded as a very probable carrier of the disease, and the daily disinfection of the prepuce with 0.25% Lugol's solution is advisable.

Sterility in cows can only be treated successfully by skilled and competent veterinarians. Many of these cases make remarkable recoveries when properly operated upon, and numerous valuable cows have been started breeding again which had been regarded as hopeless from a breeding standpoint.

THE STALLION ENROLMENT ACT.

The enrolment of grade stallions was prohibited this year in part of the Province, for the first time in its history. The amendment to the Act was passed at the beginning of the breeding season, and the territory in which grade stallions are prohibited from public service is practically all that part of the Province lying south of the Saskatchewan River. This, of course, caused a very heavy falling off in the enrolment of grade stallions for the year as compared with previous years. The number of pure-bred horses enrolled, however, was almost as large as the previous year, notwithstanding the unfavorable conditions in Southern Alberta, where horse breeding has fallen off considerably in the last year.

There is yet a good deal of work done in connection with straightening out pedigree certificates and having them properly recorded at Ottawa for owners, but in this respect the papers submitted for enrolment purposes are now in much better shape than they were a few years ago.

The proportion of interim enrolment certificates issued this year was large, partly on account of incomplete pedigree certificates, but in a large number of cases inspection of stallions was not applied for, or could not be completed before the opening of the season, and the interim certificates were issued until the necessary condition could be complied with.

Following is a summary of the enrolments for the year 1921:

	Enrolments.	Permits.	Total.
Percheron	299	264	563
Clydesdale	237	199	436
Belgian	97	54	151
Shire	22	22	44
Suffolk	6	8	14
Thoroughbred	5	2	7
Standard Bred	4	7	11
American Saddle Horse	.	3	3
Hackney	1	..	1
French Coach	.	1	1
Grades	49	39	88
Total			1,319

Respectfully submitted,

P. R. TALBOT,
Provincial Veterinarian.

Report of the Superintendent of the Seed and Weed Branch

H. A. CRAIG,
Deputy Minister of Agriculture.

Sir,—I beg to submit the report of the Seed and Weed Branch of the Department for the year 1921.

The work of the branch for the year 1921 included the supervision of weed inspection work, field crop competitions, local seed fairs, distribution of seed grain under the 1921 Seed Grain Act, collection work in connection with former seed grain distributions, and general educational work along practical lines.

NOXIOUS WEED INSPECTION

During the year 1921, 29 local weed inspectors were appointed.

The inspectors worked over varied lengths of time during the months of June, July and August, apparently did fairly successful work. Their services were continued as long as appeared to be advisable. It cannot of course be claimed that all were satisfied with the work performed, but not more than the usual amount of complaint was received at the office of the branch, and it is only reasonable that some one or more of the inspectors out of a number may prove to be not completely efficient. The remuneration paid the inspectors is scarcely sufficient to attract really active and competent men, and when many farmers are suffering from very poor crop returns, as was the case in many parts of the districts covered by the weed inspectors, they have not the courage or ability to spend time and money on the destruction of weeds, although the neglect to do so will eventually cause them more loss and labor. This attitude of the farmer makes the duty of the inspector more difficult, as his sympathy is with the farmers who are experiencing hard times. A number of the complaints that come under the notice of the department, when investigated, prove to be very trifling, and in some cases are caused by personal dislikes among neighbors. In connection with the rapid growth of noxious weeds one of the alarming features is the almost complete lack of effort put forth by the authorities in the cities and villages of the province, where in many cases weeds of all kinds are rapidly spreading. The large cities furnish the most striking evidence of this neglect. In the City of Edmonton in one short day's survey made last year by an official of this branch, over 60 places which were infested with Perennial Sow Thistle in all its stages were found, many of them growing vigorously along the principal streets, in vacant lots and cellars, and in some places on Jasper Avenue overrunning the side walks, and many growing in private gardens. Surely the civic pride of the city should be strong enough to cause it to take action to destroy at least this the most pernicious weed in our Province.

The railway lines throughout the Province are also distributing factors, and the remedy in this case should be the easiest of all, as a general order could be issued by the management to all their section foremen, instructing them to destroy the weeds wherever seen, without waiting for specific cases to be called to their attention. If this

were done, the difficulty so far as the railway lines are concerned would be practically settled, and the same applies to the managers or foremen of all irrigation ditches in their charge, which are also a great source of noxious seed distribution.

Russian Thistle, Canada Thistle, and Stink Weed should all be noted in such inspection, as well as many of the other more noxious weeds, but the above are a few of the most noxious and most dangerous weeds with which the farmer has to contend. If everyone could be impressed with the idea that it is a duty they owe to the Province to destroy a noxious weed whenever it is seen, without depending on the government to do so, the spread of noxious weeds would be very much curtailed.

FIELD CROP COMPETITIONS

Last year some changes were made by the board having charge of this work, for the regulations of Standing Field Competitions, changes which seemed to the said board no doubt to be advisable, one change being that the number of entries in each class was made higher, and the acreage in some classes was made greater. Whether or not this caused a number of societies to decline to enter the competition is not quite clear, but the fact was that only two competitions were held, one by Lacombe Agricultural Society and the other by Sedgewick Agricultural Society both of which were highly successful.

The dates of same with the names of the judges are as follows:

Sedgewick, August 3 to 6. Judge, M. N. Malyon
Lacombe, August 4 to 6. Judge, J. D. Forster

LOCAL SEED FAIR

The seed fairs held by local societies have been more than usually successful. Here again the board decided to make the number of entries greater than before, and the result has been very gratifying, whereas in past years many local seed fairs were held at which less than a dozen entries were shown. This year scarcely any had less than thirty entries and a number many more. The societies holding local fairs with dates and the names of the judges are as follows:

Brooks	Nov. 8, 1921	Prof. G. H. Cutler
Oyen	Nov. 16, 1921	R. M. Scott
Colinton	Dec. 2, 1921	G. Fletcher
Chauvin	Dec. 10, 1921	H. W. Scott
Lloydminster	Dec. 14, 1921	J. C. McBeath
Provost	Dec. 15, 1921	H. W. Scott
Innisfail	Dec. 16, 1921	J. M. Clark
Bowden	Dec. 17, 1921	J. M. Clark
Leduc	Dec. 19, 1921	E. R. Rasmussen
Busby	Dec. 20, 1921	J. M. Clark
Lacombe	Dec. 29, 1921	E. R. Rasmussen
Magrath	Jan. 4, 1922	O. S. Longman
Munson	Jan. 13, 1922	B. J. Whitbread
Lousana	Jan. 13, 1922	J. M. Clark
Sedgewick	Jan. 27, 1922	Prof. J. R. Fryer
Wetaskiwin	Jan. 31, 1922	J. M. Clark
Kitscoty	Feb. 8, 1922	J. C. McBeath
Vermilion	Feb. 11, 1922	Prof. J. R. Fryer
Raymond	Feb. 14, 1922	O. S. Longman
Vegreville	Feb. 14, 1922	J. C. McBeath
Lake Saskatoon	Feb. 21, 1922	

PROVINCIAL SEED FAIR

The Provincial Seed Fair held at Edmonton February 13 to 16, was in point of number of entries and general excellence of the exhibits far ahead of any ever held in the Province. 260 competitors entered with a total entry list of nearly 700. In the wheat classes a splendid showing was made, practically all the wheat shown being of very high quality. The same applies to the oats and barley classes, while grass seed, rye, clover and corn, had a number of very fine entries, the alfalfa being particularly good. The exhibit of potatoes while large in number was not at all of a high class, a few outstanding entries were on the list, but for the most part, the quality was poor. The entries came from almost all parts of the Province. Lack of space prevented the most favorable arrangement of the exhibits, but this could not be overcome. The competition for the best exhibits made by any agricultural society was fairly keen, and a few really fine collections were shown. The successful competitors were: 1st, Brooks Agricultural Society; 2nd, Bowden Agricultural Society; 3rd, High River Agricultural Society.

A particularly fine demonstration of the successful growing of all kinds of cereals, grasses, corn, potatoes, etc., on irrigated land, was made by the Brooks Agricultural Society under the able direction of Don H. Bark and Mr. Grafton of the above district. The total amount of prizes paid by the department was \$2,307.00, besides \$50.00 special prizes paid by others,

SEED GRAIN DISTRIBUTION

For the season of 1921, the demand for seed grain was much less than that of the two years preceding, the total distribution amounting to 39,606 bushels wheat, 44,695 bushels oats, 436 bushels barley, 20,050 bushels of fall rye, distributed among 1,300 farmers, the total value being \$105,003.78, being an average of about \$81 per applicant. The above distribution was made under the provisions of the Seed Grain Act, 1921, and was confined to the unorganized districts only.

MARKETING OF GRAIN

During the season of 1921 considerable effort was made to secure a market for our surplus grain in the United States, and in Eastern Canada. A good deal of correspondence was carried on, and at various points in the United States dealers appeared to be open to purchase grain, but it was found that on account of the low prices of grain prevailing, and the very high transportation and other charges on shipments across the line, after paying said charges a very low price would accrue to the producer, and as a result very few transactions have been reported. If transportation charges could be arranged on a fairly reasonable basis, there is no doubt that our grain could find a considerable market in the country to the south.

COLLECTIONS

On account of unfavorable crops during the past years, and a consequent scarcity of funds in the districts where previous advances have been made, collections during the year have been very small,

although a fairly active effort was made to collect, but it was found simply impossible to do so. The total collections for the year 1921 on Seed Grain accounts amounts only to the sum of \$37,000, leaving a balance outstanding at the end of 1921 of \$1,269,890.37.

During a considerable part of the year, the Superintendent of this branch was engaged with matters outside the work of the branch, and later has been absent by illness. This no doubt has detracted from the most efficient operation of the work of the branch, and may have caused some of the important matters connected therewith to have received less than the attention which was due to same.

Respectfully submitted,

J. D. SMITH,
Superintendent.

Report of the Poultry Commissioner

H. A. CRAIG,
Deputy Minister of Agriculture.

Sir,—I beg to submit herewith the report of the Poultry Branch for the year 1921.

GENERAL REVIEW

The most outstanding feature in connection with the poultry industry for the year has been the improvement in the status of the poultry business as a feature of farm work. The explanation for this lies in the economic advantage poultry products have had over many other farm products in that during most of the post-war period they have been more readily marketable. This has focussed the farmers' attention upon the poultry business and as a consequence there has been an increase in the demand for poultry knowledge, and better attention has been given to the management of the business. It is evidently becoming a settled conviction among farmers that poultry keeping properly conducted offers a means of improving and stabilizing their business.

The growth of the industry is indicated in the following figures which are taken from the Dominion Statistical Branch reports and which represent the number of poultry in Alberta.

1911	2,445,117
1916	3,172,777
1921	4,963,565

The 1921 figure is made up as follows:

Hens	4,534,042
Turkeys	283,346
Geese	83,363
Ducks	62,814

The estimated value of poultry products consumed and sold, figured on a basis of prices which obtained during the year, is as follows:

Eggs	\$7,250,000
Dressed fowl and chicken	650,000
Turkeys	450,000
Geese and ducks	120,000
	\$8,470,000

If we may judge from a survey of the trend of the poultry business during the past few years, including the post-war period, the development of an export trade in eggs would seem to be a project worthy of encouragement. There has not been in this period any difficulty in finding in Eastern Canada, or in Great Britain, a market for what eggs of high quality we have been able to ship. The possibilities in this direction, however, are contingent upon due emphasis being placed upon quality. The industry is being organized in other producing countries with a view to improving quality and Alberta must do likewise

in order to compete successfully. The establishment of a system of marketing which will enable the producer to receive payment in accordance with quality is the most important problem confronting the poultry industry of Alberta.

One of the strongest arguments for focussing attention upon egg production is that the product is of such high intrinsic value and so concentrated in form that even a high freight rate does not severely handicap the Alberta producer. The Western producer, due to his unfavorable location in relation to markets, suffers a handicap of less than 4 cents per dozen, and this handicap is largely overcome by an advantage in cheapness of feed, one of the main factors in the cost of production.

THE TURKEY INDUSTRY

There has been an extensive development in the production of turkeys in Alberta. The Dominion statistics indicate an increase in the turkey population, 1921, as compared with 1918, of over one hundred per cent. This increase has taken place chiefly in the southern part of the province where conditions in regard to production are slightly more favorable.

There was, as usual, no difficulty in marketing the turkey crop, and in securing relatively high prices. The prices paid to producers ranged from 18c. to 35c. per pound. Upwards of 20 cars of dressed turkey were shipped out of the province for the Christmas trade. These went largely to British Columbia and the United States.

Climatic and other conditions in Alberta have been found to be almost ideal for the growing of turkeys. This, together with good prices secured, has induced a great many farmers to increase their operations in this regard.

SURVEY OF MARKET SITUATION, 1921

EGGS

In January the market remained steady and high, prices paid to country points averaging 70c. for Extras. Receipts were light, and the demand comparatively heavy. Storage extras were selling at 60c., and fresh around 90c. wholesale. Statistics indicated that storage reserves in the United States were practically nil, the same being the case in this province. The stocks accumulated by the trade were exhausted before the end of January.

It soon became evident, however, mainly due to continuous mild weather, that the producing centres of the province were increasing their collections, and receipts grew rapidly during February and March. Importations were also effected from China, Japan and British Columbia. Prices took a slump in consequence to 30c. during March. Weak New York and Chicago markets and reports of heavy accumulations of eggs in the U.S. and the Eastern provinces caused a further drop to 22c. for extras f.o.b. Edmonton. The British home market was closed to Canadian eggs, due to the adverse exchange values. Slight exchange improvements in June opened up a small export trade to the Old

Country, and prices advanced a few cents in the Western provinces in consequence. The receipts during June and July were light, probably due to the low prices paid. Increased receipts in August and reports of appreciable reductions in storage reserves in the eastern provinces improved the market, and country quotations advanced to 30c. for extras. The British market was also showing marked activity, considerable quantities of storage being shipped to England. September receipts were light and quotations took a jump to 37c., and later to 45c. in November. Local storage stocks did not move until late October, dealers asking 45c. for extras. The brief spells of severe weather in December were not long enough in duration to completely cut off the country receipts, and the imports of Washington and B.C. eggs during the mild intervals prevented storage eggs attaining anything like the price they had in previous years. The market closed at the end of the year with dealers quoting around 60c. for fresh extras f. o. b. Edmonton.

POULTRY

The poultry market opened with prices comparatively low, no doubt on account of the considerable stocks of frozen poultry held in the larger markets. At this time dealers were quoting: Springers, 18c., and fowl, 15c.

The heavy demand soon exhausted the storage stocks, and country prices advanced approximately 3c. all round. The quotations for the first six months of the year remained practically unchanged, averaging, fowl, 18c., and springers, 21c. A considerable quantity of fowl was received by dealers during July, August and September, and some light springers. With the demand only fair, probably due to the low price of other food commodities, the prices slightly depreciated during these three months. In October, the country receipts increased very considerably, with quotations approximately $\frac{1}{2}$ c. down all round, the demand being very erratic and uncertain. The prices in December, except in the case of turkeys, remained steady at: Fowl, 10c.-11 $\frac{1}{2}$ c.; springers, 12c.-13 $\frac{1}{2}$ c.; ducks, 14c.-15c., and geese, 14c.-15c. The turkey market opened comparatively weak, but advanced as the Christmas season approached. The prices paid varied all the way from 18c. to 35c. live weight.

EGG AND POULTRY MARKETING SERVICE

Calgary Branch

The Calgary branch of the egg and poultry marketing service handled an increased quantity of eggs and poultry during the year 1921. The egg receipts amounted to 3,555 cases, or 99,800 dozens, against a total in 1920 of 3,220 cases, or 96,619 dozens. This represents an increase of approximately 3,200 dozens. The receipts of poultry amounted to 116,900 lbs., as against 63,913 lbs. in 1920, an increase of approximately 53,000 lbs. These figures substantiate the growing popularity of the marketing service as an outlet for farmers in the province having produce for disposal.

The system of receiving eggs from producers only, either by direct shipment or through the appointed circle shipper, has been carefully observed throughout the year. 1,871 cases of eggs were received from

individual producers, and 1,684 cases from circle shippers. There were 16 new egg circles formed during the year, and there is an increasing interest being taken in this plan of group shipment. There was also an appreciable increase in the number of individual farmers who chose to ship direct to the service.

It has been the special endeavor of this branch to educate the retail trade in the matter of buying its supplies and selling to consumers on a basis of grade. It is believed that consumption will increase and satisfaction will be more general if consumers are able to secure the quality they desire. The results have been encouraging. The trade is now more or less familiar with government grades, and is emphasizing the matter of quality instead of price in its buying practice. It is hoped that the produce trade in general will adopt the government grades and follow the same practice in its jobbing business.

The quality of most of the poultry received by the Service was good. Some of the spring stock, however, was not as well finished as could be desired and the service adopted the policy of paying a premium for well finished poultry. This had the effect of encouraging the finishing of a good deal of the spring birds, which was reflected in an improvement in the quality received.

COMMUNITY KILLING OF TURKEYS

This was the first season a community killing scheme was attempted in the marketing of the turkey crop in southern Alberta. The work was undertaken at eight points, viz., Cayley, Nanton, High River, Vulcan, Brant, Bassano and Blackie. It was arranged with the farmers who desired to co-operate in the scheme to assemble their turkeys at each of the above points on certain specified days. The marketing service supplied a staff of killers and packers and directed the work, the farmers co-operating themselves in many instances. From 192 producers who marketed in this way, 42,576 lbs. of turkey were killed, dressed and packed for market.

The method of payment was undertaken by making an "interim payment" at the time of receipt, and a final payment after marketing and deducting the cost of operation. The returns were pooled and a settlement was made shortly after the close of the year. The purpose of the arrangement was to secure larger quantities for long distance shipment to British Columbia and the United States, to reduce cost of killing and transportation, and as far as possible to get surplus stocks out of the province quickly, and thus stimulate the local market and favorably affect the price to the producer. The "interim payments" varied from 24c. to 30c. for No. 1 turkey, and an addition of 7c. per bird was paid for all home-dressed stock. Final settlement was made on a basis of 34c. per lb. for No. 1 turkey, and 29c. per lb. for No. 2 turkey.

In this project, as well as in the work of the egg and poultry marketing service, the poultry branch has had the hearty co-operation of the Dominion poultry representative and his assistants.

EGG AND POULTRY MARKETING SERVICE

Edmonton Branch

The volume of produce handled during the past year has shown an increase in the demand for the services of this branch of the marketing organization. The egg receipts for 1921 totalled 78,000 dozen, as against 75,000 dozen in 1920, whilst the total receipts of poultry were 86,500 lbs. compared with 44,000 lbs. received during 1920. The more general use of the service is also shown by the following:

	1919	1920	1921
No. of points shipping	36	88	105
No. of Egg Circles shipping	6	27	52
No. of individual shippers	62	171	200

With a view to ascertaining the possibility of developing an export business in eggs the Marketing Service sold a car of storage "Firsts" to an eastern exporter for shipment to Great Britain. An exceptionally good report was received from the London consignee, an extract reading as follows:

"With reference to 450 cases storage eggs ex the S.S. Balingbroke, the 100 cases inspected ex this ship we found to be good quality and good condition."

This branch of the service undertook an extension in the feeding and finishing of spring birds with a view to improving the quality of the product marketed and the price to the producer. Suitable quarters were secured for the work, and during the season the birds were fed for a period ranging from 10 days to two weeks. This greatly improved the quality of the finished product, and has enabled the service to secure better prices.

The policy of grading all eggs and poultry and paying for same on a graded basis has been strictly adhered to throughout the year. To carry out this system involves a great amount of detail in computing returns, accounting and educational work, but the justice of the system is everywhere appreciated and results are beginning to show in an improvement in the quality of the eggs handled.

More recently the marketing service has endeavored to cater more fully to the requirements of the retail trade and the consumer. Retailers have experienced difficulty at times in securing eggs of definite known quality, such as they can guarantee to consumers as suitable for their particular purposes. In view of this the marketing service has adopted the policy of selling on a basis of the three commercial grades Extras, Ones and Twos, and for the most part merchants and consumers have appreciated the opportunity of thus securing eggs of definite grade and quality.

EGG AND POULTRY MARKETING SERVICE

PERCENTAGES OF GRADES, 1921.

	Extras	Ones	Twos	Cracks	Broken	Rots
January	76.56	15.7	4.16	2.4	.5	.5
February	54.5	37.3	4.3	2.9	.65	.2
March	32.	51.	13.4	2.06	1.06	.5
April	17.7	60.6	17.9	4.3	.8	.2
May	22.7	52.8	18.4	4.3	1.00	.5
June	10.15	55.7	26.4	4.00	.9	.5
July	10.4	60.7	20.7	6.20	.6	1.3
August	13.5	48.1	29.1	6.3	.9	1.9
September	12.61	48.2	31.9	4.7	....	1.5
October	14.6	48.6	30.3	3.50	.90	2.
November	22.34	56.3	17.1	2.1	1.1	.8
December	26.2	56.02	16.20	1.1	....	.4

The grading of all eggs being a major feature of the work of the Egg Marketing Service, the above table is of particular interest inasmuch as it gives the exact percentage of each grade of eggs received by the Service for the year 1921. Every endeavor is being made to increase the percentage of extras and ones, particularly extras, and to decrease the volume of the lower grades at present marketed by the farmers.

PROVINCIAL POULTRY PLANT

I am able to report another successful year in the operation of the provincial poultry plant. During the year a good egg yield was maintained, and the stock has shown a gradual improvement in type and laying quality as a result of careful selection and breeding.

Hatching and rearing operations were conducted successfully. Mortality in the growing chicks was kept down to approximately eight per cent.

A special effort was made during the year to demonstrate to farmers that poultry can be made profitable. One hundred pullets of the various general-purpose breeds were selected for the test. All feed consumed was charged against the birds at elevator selling prices. Trap nest records were made of the eggs laid by each bird, and all eggs laid were valued at prices paid by the egg and poultry marketing service at country points.

The Wyandottes headed the test with an average of 175 eggs per bird; the Barred Rocks took second place with an average of 171 eggs; the White Leghorns, third, with an average of 155 eggs, and the mixed pen of Reds and Orpingtons with an average of 135 eggs per bird.

This was not a test of the merits of the respective breeds. The Leghorns, Reds and Orpingtons have not been "bred up" for so long a period as the Rocks and Wyandottes. Further effort and time devoted to selection and breeding for egg production will improve their records and make them appear to better advantage.

SUMMARY OF RESULTS

Number of pullets	100
Total eggs laid	15,945
Market value (based on E.P.M.S. prices at country points)	\$472.17
Amount and cost of feed consumed (city elevator prices)	
Grain—4,600 lbs.	\$101.40
Mash—4,272 lbs.	116.21
Shell—85 lbs.	
Grit—55 lbs.	3.29
Total	<u>\$220.90</u>
Average lbs. of feed consumed per bird	90
Average cost of feed per lb.	2.4c
Average cost of feed per bird	2.20
Revenue over cost of feed	\$251.27
Average per bird	<u>\$2.51</u>

The birds were fed a grain mixture containing 40 per cent. cracked corn, 40 per cent. wheat, and 20 per cent. oats. The mash mixture consisted of 20 parts by weight of bran, 20 of shorts, 20 of beef scrap, 15 of ground corn, 15 of oat chop, 5 of oil cake meal, 1 of salt and 1 of charcoal. During the winter months the bran was reduced to 10 lbs., and 10 lbs. of ground alfalfa was added as green food.

The following is a statement of breeding stock, eggs for hatching, and day-old chicks distributed to farmers. The orders were in all cases limited as to number supplied in order to make the distribution include as many farmers as possible.

Notwithstanding this, we were unable to meet the requirements of all those desiring foundation stock, and quite a number of applicants could not be supplied.

BREEDING STOCK

	Males.	Females.
Barred Plymouth Rocks	65	29
White Wyandottes	39	6
Buff Orpingtons	19	16
S.C. White Leghorns	11	6
S.C. Rhode Island Reds	15	0
R.C. Rhode Island Reds	14	24
	<u>163</u>	<u>81</u>

EGGS FOR HATCHING

Barred Rocks	1,937
White Wyandottes	1,423
Buff Orpingtons	891
S.C. Rhode Island Reds	442
R.C. Rhode Island Reds	663
S.C. White Leghorns	260
	<u>5,616</u>

DAY-OLD CHICKS

Barred Rocks	275
White Wyandottes	934
Buff Orpingtons	236
S.C. Rhode Island Reds	41
S.C. White Leghorns	533
	<u>2,019</u>

POULTRY SHOWS

Mr. Shackleton, of this Branch, assisted in the judging at the following poultry shows held in the province: Calgary, Lethbridge, Edmonton, Red Deer, Wetaskiwin, Stettler, Vulcan. He also judged at the following Agricultural fairs: Calgary, Edmonton, Red Deer, Irma, Stony Plain and Tofield.

Respectfully submitted,

J. H. HARE,
Poultry Commissioner.

Report of the Director of Provincial Demonstration Farms

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I have the honour to submit herewith the annual report of the Provincial Demonstration Farms.

CROPS

The crop of 1921 on the demonstration farms has been rather discouraging. The spring opened very favourably for seeding operations. In spite of the fact that it was not quite as early as usual, the land made a fine seed bed and with occasional rain during the early summer the crops made rapid growth. But the dry, hot winds of June, and July evaporated the moisture, ripened the crops too quickly, making the yield of oats, wheat and barley very light for the acreage seeded. This may be said especially in regard to the Youngstown and Gleichen farms. At the Youngstown farm, the yield of wheat was from five to ten bushels per acre; oats from fifteen to twenty bushels per acre; barley from ten to fifteen bushels per acre. Several of the other farms were visited by hail, destroying the entire crop in some instances. At the Claresholm farm the crops were all headed out and were showing signs of a good yield of oats, wheat and barley, but were totally destroyed by hail, making it necessary to purchase feed and seed. At Vermilion, Gleichen, Olds and Sedgewick, the crops were partially destroyed by hail, but with showers of rain later on in the season, the oat crop made rapid second growth, enabling us to obtain enough roughage for our stock. The yield of grain at all of these farms was very light, with the exception of the wheat crop at Sedgewick, where the hail did not reach, making a yield of from twenty to twenty-five bushels per acre. At Stony Plain and Athabasca farms, the yield of grain was very good. The hay crop was very light on all of the farms, with the exception of Stony Plain, where the timothy and alsike clover gave a yield of two to two and one half tons per acre.

At the Athabasca farm we erected a trench silo to compare with the stave silos on the other farms, for storing sunflowers and corn for silage purposes. The silo was made as cheaply as possible, the only cost being the labor of digging out the earth, and cutting tamarack posts out of the bush to make a retaining wall on the sides and ends. The roof was made of poles covered with straw and earth. The dimensions are: 20 feet long, 12 feet wide and 10 feet deep, with the end opening into the feed room of the cattle barn. On comparing the ensilage taken out of this silo with the other, the quality is about equal, making it possible for any farmer to have a silo on his farm at very little expense.

Sweet Clover.—This crop has been seeded during the past season on all of the farms, ranging in acreage from two to twelve acres. Although a very dry season, most of the land seeded made a very good stand, and we hope with a favorable year, to obtain good results. In previous years this clover has only been grown on small plots, as it is very difficult to get a good stand of other tame grasses for hay and

pasture on the farms in the Southern districts. With this point in view I hope to have a larger acreage seeded of this clover for the coming year, so we shall be able to include this crop in our rotation for pasture and hay.

Fall Rye has been grown successfully on all of the farms for several years. This crop cannot be dispensed with, as it is a valuable asset to the farms in the different parts of the Province, especially where soil drifting is so prevalent. There are several ways that this crop may be used, but before adding anything further to its merits, I may state that it is essential that where fall rye is to be sown, the land must be properly prepared during the summer before seeding. The land should be summer-fallowed during the early part of the season, so as to retain the moisture in the land. All weeds must be kept in check, for if allowed to grow they will absorb the moisture, leaving the land in a very unfavorable condition to seed for fall rye.

Fall rye may be sown in the latter part of July, and can be used for pasture for two months in the fall. It is not advisable to pasture too closely in the fall so as to expose the roots to the frost during the winter. Again, in the spring, this crop can be pastured for several weeks before the tame grasses are ready for pasture, then the stock may be taken off and the rye will ripen, giving a fair yield of threshed grain. It may also be used for hay if cut when in the first bloom before the straw begins to get hard, and will yield from $2\frac{1}{2}$ to 3 tons per acre of good quality hay for feed.

Corn.—The corn crop on the farms did very well during the past season. A small acreage was seeded on all of the farms, and in no case was this crop a failure. At the Stony Plain farm, where in previous years we could not grow corn for the frosts, during the past season we had a good crop with the ears nearing maturity, making a high-class of ensilage. We hope from year to year to increase this crop for silage purposes.

Alfalfa.—This crop has been grown on several of the farms on small plots, for a number of years. During the past summer we had seeded to alfalfa at the Raymond farm, twenty acres and at Gleichen farm, thirty acres. With the help of water on these farms we hope to have a good yield of hay.

Turnip Crop.—This crop did not do very well during the past season, as there was a lack of moisture to germinate the seed, and at some of the farms this crop was destroyed by cutworms. In some cases we had very good yields, at Sedgewick and Stony Plain, this crop did exceptionally well.

Seed Grain.—At the present time we are able to supply good seed for grain from some of the farms to any person requiring same, namely, Banner Oats, O.A.C. '21 Barley, Marquis Wheat. We hope in the near future to be able to supply the farmers with the best seed grain of other varieties at reasonable rates.

Rape.—This is one crop that can be grown on any kind of soil with good results. With a fair amount of moisture, and with proper cultivation, rape will give a good supply of green food for pigs, sheep and young cattle, and steers. It will help materially in the fall to have a field of rape to pasture lambs and steers that are for market purposes. With

a little grain added to this ration, they will make rapid gains. It is not advisable to enclose animals on this pasture alone, as they should have access to grass pasture besides. Rape should be planted in rows in preference to being sown broadcast, as the land can be kept in a proper state of cultivation.

Sunflowers.—This crop has been grown on all of the farms during the past season with very good results. In some cases, where the early frosts came before the sunflowers were cut, and destroyed the leaves, leaving dry leaves and stocks for ensilage. This consequently did not make as good a quality as when cut earlier, and the entire leaves are mixed with the stocks. If this crop is cut before maturity, it is necessary to mix one load of green feed to two of sunflowers to absorb the moisture. At the Vermilion farm, sunflowers were used entirely for silage purposes, with good results, an average yield of from twelve to fifteen tons per acre.

At the Claresholm farm, where we had ten acres of corn and five acres of sunflowers, the hail cut the leaves entirely off both crops. During the balance of the season, the sunflowers did not develop any further growth, but the corn produced a fair quantity of leaves of second growth making a good quality of ensilage.

At the Youngstown farm, sunflowers gave a yield of from ten to twelve tons per acre. With sufficient moisture this crop would give a heavy yield in that district.

Live Stock.—All of the herds on the different farms did very well during the past year. We had no contagious disease of any kind, and the production of young stock was satisfactory. During the past year there was added to our dual-purpose Shorthorn herd at Vermilion farm, seven imported females and two bulls, making this one of the best herds of the breed in the Province, and with addition to our present herd we hope to be able to obtain some good records during the present year. The herd of Holsteins at Stony Plain farm have made some very good records of performance. In the senior two-year-old class in the seven-day test, Daisy Alcartra Segis made the record of 422.4 lbs. of milk, 23.59 lbs. of butter, making her the leading heifer in the Province in her class; she also completed a 305-day milking period with the production of 15,604.3 lbs. of milk. As this heifer is due to freshen shortly, it is not possible to carry her to the end of the 365-day period. Hengerveld Pearl Nephele 5th, another senior two-year-old on the seven-day test made the production of 514.5 lbs. milk; 23.12 lbs. butter, and had just completed a milking period of 365 days with a total of 18,421.3 lbs. of milk, an average of over 50 lbs. of milk daily. In the mature class Vrouka Mercedes produced in the seven-day test 560.8 lbs. of milk; 27.33 pounds of butter and in 289 days she has produced 20,426.7 lbs. of milk. She still has 76 days to milk before her entire period of 365 days is completed. We expect this cow to produce in her full period 24,000 lbs. in 365 days.

The above records are from only a few of the outstanding cows in the herd.

Respectfully submitted,

D. DOUGLAS,

Farm Director.

Report of the Superintendent of Fairs and Institutes

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I have the honour to submit herewith the report of the Superintendent of Fairs and Institutes for the past year.

EXHIBITIONS AND FAIRS

No fewer than 108 fairs were held during the season of 1921, this being the largest number ever held in the province. In 1920, we held 104 fairs; in 1919, 97 fairs; in 1918, 80 fairs; and in 1917, 94 fairs. Of the 108 fairs held during the past season, no fewer than 83, or about 75 per cent. of the whole were reported on favourably by the judges. The previous year only 50 per cent. were so reported. The change in this respect is gratifying, and I attribute it largely to the fact that all the fair secretaries were notified in advance that there was a danger that some of these agricultural societies might lose their charters, and be compelled to disorganize unless proof was given that they were doing good, useful work in their respective communities. Increased prize lists were offered by many societies, and the result has been a very marked improvement in the number of exhibits, and the quality and condition of the stock as well as more general interest on the part of the visitors. Unfortunately, however, the attendance at almost every fair in Alberta and throughout Canada showed a falling off compared with previous years, and this has resulted naturally in a financial deficit for a great many societies, thus creating a problem somewhat difficult of solution.

Weather.—For the most part the fairs of 1921 were favoured with excellent weather, only a very few had rainy days, and no fair had to be abandoned or postponed by stress of weather. A few suffered, however, both in entries and attendance, through being held during harvest when farmers were all otherwise engaged.

EDUCATIONAL AND EXTENSION WORK

A very large number of short-course schools and farmers' Institute meetings were held during 1921. Beginning on February 21st, the special weed train equipped by the Canadian Pacific Railway Company covered a large portion of Southern Alberta, stopping at twenty-four towns where lectures were given by Professor S. A. Bedford, of Winnipeg; E. H. Strickland, of Ottawa; Superintendent W. H. Fairfield, G. H. Hutton; H. A. Craig, Dean Howes, Professor Cutler, C. S. Noble, James Murray, Hugh Mackintosh, D. H. Bark, J. D. Smith and J. G. Clark. The chief subjects discussed were the best methods of controlling weeds, soil drifting and the grasshopper and cut-worm menaces. Much interest was manifested in these meetings, and a vast amount of good was doubtless received from the information given. The places covered by the train were Irvine, Medicine Hat, Retlaw, Lomond, Whitla, Bow Island, Grassy Lake, Taber, Lethbridge, Raymond, Magrath, Cardston, Warner, Milk River, Wrentham, Foremost, Etzikom, Manyberries, Macleod, Pincher, Barons, Champion, Stavelly and Granum.

Short-course schools were held in the north country at Beaver Lodge, Grande Prairie, Spirit River, Peace River and High Prairie, the speakers being S. G. Carlyle, H. S. Pearson, A. W. Foley, James Clements, Captain Freeborn and Dr. Morrison, the two latter being representatives of the Federal Government. Meetings were held daily in the large government tent and the subjects discussed were live stock in all its branches, dairying, sheep farming, poultry raising; appropriate motion pictures being shown in the evenings. The average attendance at these nineteen meetings in the north was ninety people. There were also Institute meetings held at Lake Saskatoon, Sexsmith, White Mountain, Waterhole, Blue Sky, Griffin Creek, Kerndale, Pine Bluff, Bear Lake and Peace River. An average of fifty people at-



"Craigie Ascot" by Craigie Masterpiece

tended these nine meetings, and the people all expressed their appreciation of the information they had received. Mr. Syrotchuk, a native Ukrainian, and Mr. Foley held meetings also at St. Paul, Innisfree, Vegreville, Mundare, Chipman, Lamont, Vilna, Smoky Lake, Warspite, Redwater and Radway Centre. These lectures were interpreted to all the foreigners by Mr. Syrotchuk. The attendance varied from twenty to one hundred and twenty people.

New Societies.—New societies were organized during the past year at Rimbey, Thorhild, Greencourt and Patricia, and initial fairs were held at each place with a fair measure of success.

Judges.—On account of a large number of fairs being held simultaneously at the urgent request of the various societies, it became necessary to engage no fewer than seventy-six judges to perform the work during the past session. This is by far the largest number of judges ever employed in one season, and the fact of there being only one or two complaints on the awards made, and these only of a minor nature, speaks well for both judges and exhibitors.

Changes in Ordinance.—Several amendments to the Agricultural Societies Ordinance were made during last session of the legislature as follows: The grant to agricultural societies was reduced from 66 2-3% of the prize money paid out to 60%, this being a reduction of 10%. The membership grant previously was one dollar per member up to \$150 maximum. This grant is now 50 cents per member with a maximum of \$100. Societies that have less than 100 members do not receive any membership grant. The two institute meetings which formerly were compulsory in order to qualify agricultural societies for the membership grant are now made optional. Poultry associations and horticultural societies are now on a 60% basis, same as agricultural societies, and field grain competitions, good farm competitions, combined field crop and clean seed competitions and spring stallion shows are also on a 60% basis as Government grant.

The distance between an existing agricultural society and a new society has been increased from 15 miles to 25 miles, thus making it more difficult to increase the number of societies. The present number of agricultural societies and exhibition associations in Alberta is 120.

Calf-feeding Competitions.—The boys and girls' competitions at Edmonton spring show and Calgary winter fair were both very successful. At Edmonton, over \$2,000 was paid in prize money, there being in all 88 entries in the various classes. At Calgary, in November, no less than \$3,600 was offered in prize money for calves, sheep and pigs, fed and exhibited by the boys and girls, the total entries for which were 130.

The increasing interest taken in these juvenile contests proves their popularity and value to the community, and is having most gratifying results in the improvement of the young live stock and in teaching the children of Alberta farms improved methods of handling, feeding and exhibiting the live produce of the farm.

Poultry Competitions.—Poultry shows were held successfully during the past season at Edmonton, Calgary, Lethbridge, Red Deer, Medicine Hat, Wetaskiwin, Vulcan, Magrath, Ogden and Taber.

The judges at these shows were Professor R. Graham, George Robertson, George Wood, Richard Oke, J. Shackleton, M. Ross Wallace, S. F. Bailey, J. H. Westbroke, I. Emmerson, E. N. Barker, T. Montgomerie and P. J. Timms.

A greatly increased interest in poultry raising is manifested all over the province and many requests for lectures and information on the subject are being received and complied with.

Horticultural Exhibitions.—Successful shows were held during 1921 at Edmonton, Calgary, Red Deer, Camrose, Islay, Bellevue, Magrath and Taber. All these shows have been favorably reported on by the judges and the press.

Chicago International Show.—At this, the greatest of all stock and grain shows, fresh evidence was given last December that no country or province on this continent excels Alberta for the quality of its grain. In the contest for hard spring wheat, Alberta won no fewer than 10 prizes in an entry list of 80 competitors. In oats the first six prizes were all won by Alberta exhibitors. The grand championship, for which there were no fewer than 214 entries, came to Alberta, and the same distinguished honour came to the province last year. In the contest for alfalfa seed, Alberta won first and third prizes in a class of 61. Such victories are equally gratifying and convincing proofs of the superiority of the soil and climate of our province.

The exhibits of live stock from Alberta at the recent show, although comparatively small, won several prizes in very strong competition.

Respectfully submitted,

ALEX. GALBRAITH,

Superintendent.

LIST OF ALBERTA AGRICULTURAL SOCIETIES AND SECRETARIES WITH
DATES OF FAIRS IN 1921.

SOCIETY	DATE OF FAIR	SECRETARY	ADDRESS
Alix	August 26-27	W. L. Pettet	Alix
Bashaw	August 3-4	A. J. Frank	Bashaw
Benalto	July 26-27	P. T. McKee	Benalto
Berry Creek(Pandora)	September 2	L. E. Helmer	Nateby
Big Valley	August 12-13	W. W. Bridge	Big Valley
Bowden	September 29	Mrs. W. A. Hills	Bowden
Busby	September 13-14	S. E. Hayward	Busby
Bye-Moor (Hartshorn)	August 1	Leonard Browne	Hartshorn
Bear Lake	September 15-16	H. L. Dundas	Bear Lake
Carmangay	July 29-30	C. H. Messinger	Carmangay
Castor	August 15-17	Geo. Stevenson	Castor
Chauvin	August 4	P. H. Perry	Chauvin
Chinook	August 4-5	J. W. Yake	Chinook
Claresholm	August 9-10	R. K. Peck	Claresholm
Cochrane	September 29-30	J. Beynon	Cochrane
Colinton	September 14	J. P. Richardson	Colinton
Coronation	August 11-12	E. T. Scragg	Coronation
Crossfield	July 25-26	F. L. Watters	Crossfield
Cardston	August 16-17	W. H. Duce	Castor
Daysland	August 4-6	W. T. Fowler	Daysland
Didsbury	August 24-25	G. A. Wigglesworth	Didsbury
Donalda	August 12-13	Wm. E. Porter	Donalda
Durlingville & Bonnyville (Bonnyville)	September 7	J. L. Dayton	Bonnyville
Eastern Alberta (Provost)	August 5	S. F. Burgess	Provost
Edgerton	August 2	Jas. Taylor	Edgerton
Edson	August 31	J. Leyden	Edson
Fort Saskatchewan	August 11-12	H. W. Dodge	Fort Saskatchewan
Gleichen	August 11	F. L. Mallory	Gleichen
Goose Creek (Loughheed)	August 3	F. B. Mundy	Loughheed
Grande Prairie	September 28-29	W. H. Watts	Grande Prairie
Granum	August 1-2	P. S. Clark	Granum
Griffin Creek	September 13-14	O. B. Winterstein	Griffin Creek
Green Court	August 31	N. E. Bressey	Green Court
Hanna	August 9-10	R. G. Fletcher	Hanna
Hays (Lousana)	September 5-6	R. G. P. Cochrane	Lousana
Highland (Delia)	August 11	R. P. D'Alton	Delia
High River	August 11-12	J. A. Massey	High River
Holden	August 15	A. T. Stewart	Holden
Innisfail	July 29-30	W. G. McArthur	Innisfail
Innisfree	August 4-5	W. J. Reid	Innisfree
Irma	August 18-19	J. W. Milburn	Irma
Kitscoty	August 19	T. H. Currie	Kitscoty
Lacombe	August 22-24	Ino. McKenty	Lacombe
Lake Saskatoon	August 17-18	F. Walthew	Lake Saskatoon
Langdon	August 10	Walter Allcock	Langdon
Lamont	August 10	G. R. Stewart	Lamont
Leduc	August 9	A. R. Ennis	Leduc
Lloydminster	July 25-26	H. Huxley	Lloydminster
Lomond	August 5	W. H. Smith	Lomond
Macleod	August 3-4	R. I. E. Gardiner	Macleod
Mannville	September 20	C. R. Wood	Mannville
Matziwin (Brooks)	September 6-7	D. H. Bark	Brooks
Mid-Pembina (Dunstable)	September 8	A. D. Gilmer	K. E. Box, R.R. 1, Ex Busby
Milnerton	September 28	A. Hutchinson	Knee Hill Valley
Medicine Hat	June 27-29	C. A. Richardson	Medicine Hat
Mossidae	August 24	T. Richmond	Mossidae
Munson	August 15	L. C. Jackson	Munson
Nakamun & Sion District	September 6	J. B. Nixon	Sion

SOCIETY	DATE OF FAIR	SECRETARY	ADDRESS
Nanton	August 18-19	Wm. Robertson	Nanton
Okotoks	August 16-17	E. A. Hayes	Okotoks
Olds	July 27-28	E. L. Grimes	Olds
Oyen	August 2-3	F. J. Whitlock	Oyen
Paddle River (Barr-head)	August 26	Mrs. Pattie Sebern	Mellowdale
Peace River	August 9-10	D. J. Johnston	Peace River
Plamondon	September 15	Wm. Plamondon	Plamondon
Ponoka	August 25-26	G. E. Clarke	Ponoka
Priddis & Millarville (Priddis)	July 27	E. E. Woodford	R.R. 1, Calgary
Pincher Creek	August 23-24	H. Bossenberry	Pincher Creek
Patricia	September 1	A. Smart	Patricia
Red Deer	July 18-19	J. E. Welton	Red Deer
Retlaw	August 2-3	W. A. Hempel	Retlaw
Richdale	August 2	A. T. Penwarden	Richdale
Rochester	September 16	W. A. Shopland	Rochester
Rocky Mountain House	September 19-20	Geo. T. Thomsen	Rocky Mtn. House
Rimbey	August 18	W. Geo. Manson	Rimbey
Sangudo	September 2	R. Miehlfhausen	Sangudo
Sedgewick	August 8-10	E. S. Clemens	Sedgewick
Sibbald	August 1	C. O. Dudley	Sibbald
Spirit River	September 30	David Esplen	Roycroft
Starland (Rowley)	September 13	A. C. Smith	Rowley
Stavely	August 5	E. C. Webster	Stavely
Stettler	August 18-20	G. T. Day	Stettler
Stony Plain	August 16-17	Wm. Robertson	Stony Plain
St. Paul	September 12	Ernest Cloutier	St. Paul
Strome-Killam (Strome)	August 11-12	R. J. McGowan	R.R. 1, Killam
Swalwell	August 4-5	Wm. Waldron	Swalwell
Taber	July 25-27	W. C. Lane	Taber
Three Hills	August 8-9	C. P. McDonough	Three Hills
Tofield	September 25	Mrs. Peter Lee	Tofield
Trochu	August 10-11	R. H. Slipp	Trochu
Thorhild	September 24	U. G. Jardy	Thorhild
Vegreville	August 8-9	W. H. Morgan	Vegreville
Vermilion	August 3	W. E. Sutton	Vermilion
Veteran	August 9-10	J. E. Bower	Veteran
Viking & Birch Lake District (Viking)	August 16-17	Wm. McAthey	Viking
Wainwright	August 3	Samuel Lewthwaite	Wainwright
Warspite	September 5	Wm. Pickard	Warspite
Waterhole	August 12-13	H. M. Bailey	Waterhole
Westlock	August 23	M. G. Gardam	Westlock
Wetaskiwin	August 1-3	R. N. Shaw	Wetaskiwin
Winnifred	July 28-29	C. A. Larson	Winnifred
Youngstown	August 8-9	O. H. Price	Youngstown

EXHIBITION ASSOCIATIONS

Calgary	June 29-July 7	E. L. Richardson	Calgary
Edmonton	July 8-16	W. J. Stark	Edmonton
Athabasca	September 12-13	S. R. Farquharson	Athabasca
Camrose	July 21-23	J. W. Forde	Camrose
Lethbridge	July 20-22	R. W. Gardner	Lethbridge
Morinville	August 18	J. B. Dalphond	Morinville

GAME IN ALBERTA



PARTRIDGE



THE CANADIAN LYNX

Report of Chief Game Guardian

H. A. CRAIG,
Deputy Minister of Agriculture.

SIR,—I have the honour to submit herewith the sixteenth annual report of this branch of your department, covering the administration of the Game Act and Prairie Fires Ordinance, being for the year 1921.

REVENUE

Although the obtaining of revenue is not the first consideration in connection with the protection of game, it has proven to be a very valuable feature, as a successful year in a financial way justifies to a greater extent the expenditure of monies for the enforcement of the provisions of the Game Act, without any direct cost to the Province. From this standpoint, I am pleased to say that the year 1921 has been the most successful, as a greater amount of money was collected under the Game Act than in any former year, also a greater surplus is shown by this report.

GAME BIRDS

The nesting season for game birds was particularly favorable in all sections of the province, and as many of the natural enemies of birds have been less numerous than for many years, it is only to be expected that a large increase in their numbers would be noticed. This applies more particularly to grouse. Water-fowl do not show an increase, which no doubt is owing to the drying up of nesting and feeding grounds during the recent dry seasons. Great numbers of prairie chicken and partridge were killed during the season, and I may say that there were too many killed before the season opened by unscrupulous persons, some of whom paid dearly for their birds, as penalties imposed were more severe in 1921 than in any previous year. Many old-timers have expressed the opinion that there were more prairie chicken (Sharp-tailed grouse) in the brushy and wooded areas in 1921, than they had seen for thirty years previously. Unquestionably an unusual number of breeding stock was left, which under favorable conditions should again produce a plentiful supply of birds for the season of 1922. The Ruffed Grouse (commonly called Partridge) was also very plentiful, and was just as easily shot as in previous years. It is to be regretted that this bird is not as wild as the same species in Eastern Canada, where the best hunters are put to the test to secure a bag.

The European Grey Partridge (commonly called Hungarian Partridge) still continues to spread to new sections of the province. Some of these birds now being found in the Edmonton district, but being very fast on the wing, good bags were not reported by sportsmen. It is considered by many that this is the coming game bird for the prairie areas of the province, and certainly from the way they have increased since their introduction, indications are that they will eventually be found in all prairie sections of the country, and the less thickly wooded areas as well. I have reason to believe from the food habits of this bird, it will in all probability be more helpful to the agricultural interests of the province than the prairie chicken, as it is known to be a great

destroyer of weed seeds, and although the prairie chicken is a great destroyer of worms, insects and weed seeds, it sometimes feeds on grain stacks and stooks, but ordinarily it prefers to feed on the ground.

The year 1921 being much drier than usual in most sections of the province, has resulted in many of the sloughs becoming dry, and the water in the lakes becoming lower, with the result that waterfowl were unable to find the usual supply of food. In spite of this, however, excellent duck shooting was obtained in many districts.

BIG GAME

Owing to the lack of snow in the early part of the season, big game hunters were not as successful as would otherwise have been the case. 5,290 licensed hunters exercised their rights in this respect.

Below is a statement showing the number of big game animals killed each year from 1907 to 1921 inclusive;—

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Antelope	49	45	89	126	101	105	119	...	...	...	...	...	...	...	close season
Moose	14	37	86	184	305	425	865	1335	1116	849	1026	900	974	1080	1018
Caribou	...	...	5	8	30	40	56	78	34	28	43	45	52	55	68
Mountain Sheep...	...	...	40	54	49	90	65	78	110	83	57	76	77	76	108
Mountain Goat ..	...	...	38	46	56	58	42	61	40	26	37	43	33	35	47
Elk	...	...	...	7	...	...	...	...	1	...	...	...	...	...	1 close season
Deer.....	59	125	299	540	619	768	908	1388	692	560	705	828	851	1047	1120

FUR-BEARING ANIMALS

As in 1920 and in previous years, permits were issued to owners or occupants of land to the south of the 55th parallel, authorizing them to trap beaver on their own land, where the same were causing damage or inconvenience, with the result that there were received 332 pelts, taken under 132 permits. These were sold by this Department, and all told realized the sum of \$5,768.07, being an average of \$17.37 per pelt.

The fur market was much more stable than for the latter part of the year 1920. Prices being paid during the months of November and December, 1921, were much more satisfactory than during the corresponding months in 1920.

The increase in the number of muskrats to the south of the North Saskatchewan River warranted the issuing of permits to owners of land to trap thereon, as authorized by the Lieutenant-Governor in Council on the strength of your recommendation. A charge of \$1.00 is made for such permits, and the policy adopted has proven very popular. Those who have water on their land suitable for the rearing of muskrats are thinking seriously of doing something to encourage the muskrats to remain and increase, thereby providing a source of revenue, limited only by the extent of the lakes or sloughs. In many cases farmers have realized more from the sale of muskrat pelts than from their crop, and I am of the opinion that the future will see the adoption of muskrat farming by land owners, where the surroundings are suitable or the establishing of such farms.

One dollar and upwards has been paid this season for muskrat pelts. This has resulted in a great many persons who have never previously

done any trapping, undertaking to earn a livelihood in this way, resulting in that part of the province lying to the north of the North Saskatchewan River being overrun with amateur and professional trappers, all intent on securing the pelt of the lowly muskrat.

It will not be known until the spring of 1922 as to how many of these animals have been left. There is no question but what the trapping of these animals in all sections of the province will have to be eventually regulated in such a way as to prevent their near extermination, especially if prevailing prices are to continue. The value of this animal to the province should not be lost sight of, as it is universally trapped by all classes.

The total of monies obtained by residents of the province from the sale of muskrat pelts will exceed that obtained from the sale of the pelts of any other wild animals.

The prohibiting of trapping of muskrats in the month of November has already shown the benefit to all concerned, as the average quality of pelts received to date is much above the average of those taken in previous years, and the difference should be more marked next season.

TAX ON FURS

The policy of collecting revenue from a tax on the pelts of wild animals was first put into effect on the 1st of November, 1920. The collecting of revenue from this source, as was expected, was not popular with all classes, and some dissatisfaction continued all through the season of 1920 and 1921, but with the opening of the season for 1921-22 on November 1st, it was noticed that those affected have become accustomed to this tax, and no objection thereto is now taken. Changing the rate of taxation on weasel from five cents to three cents and on muskrat pelts from three cents to five cents, is now on a more equitable basis, as the muskrat pelt is much more valuable than that of the weasel.

My estimate of revenue from the fur tax for 1921 has exceeded expectations, the total collected being \$32,236.13.

BRANDING GAME HEADS

Section 11 of the act requiring the branding of game heads before buying and selling shows the following results:—

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Mountain Sheep..	216	2	9	11	2	6	4	4	15	8	6	2	14	10	7
Mountain Goat ..	62	..	1	1	2	2	2	2	..	..	..	..	1	..	..
Elk	41	3	4	2	2	1	..	..	1	3	..	..	..	3	1
Moose	39	29	33	32	40	40	48	42	30	22	10	19	14	19	7
Caribou	16	6	6	2	3	3	2	5	1	1	..	2	11	3	1
Deer	142	15	26	26	40	40	24	32	15	12	15	12	9	18	5
Antelope	95	5	..	3	3	3	3	10	..	..	..	6	..	..	1

SALE OF GAME

Section 16 of the Game Act permits the sale of certain species of game birds and big game animals under a license. Returns made by market hunters and game dealers give the following results:

MARKET HUNTERS

	1913	1914	1915	1916	1917	1918	1919	1920	1921
Deer	7	14	5	..	2	1	5	5	3
Moose	43	34	17	10	15	14	16	13	19
Caribou	3	1	...	1	..	..	..	1	...
Geese	56	25	...	29	38	5	77	116	44
Swans	...	...	...	...	...	...	...	...	...
Ducks	15,339	3,892	7,394	9,973	3,391	2,594	3,861	7,112	5,715
Mtn. Sheep..	..	2	...	...	2	...	...	...	..

GAME DEALERS

	1913	1914	1915	1916	1917	1918	1919	1920	1921
Deer	6	18	6	1	2	2	6	1	5
Moose	23	39	20	17	13	16	18	13	26
Caribou	3	...	..	1	...	..	..	..	4
Geese	76	..	...	..	..	1	13	35	26
Swans	1	...	...	...	...	...	...	...	...
Ducks	16,564	3,497	5,940	11,481	5,082	5,388	4,218	8,428	8,927
Mtn. Sheep..	...	...	...	1	...	...	..	..	..

LICENSES AND PERMITS

You will note that there has been a falling off in the number of general game licenses, non-resident bird licenses, resident big game licenses and resident farmers' big game licenses, as compared with 1920. This no doubt is due to the fact that conditions for hunting big game were not as favorable as in 1920, owing to the lack of snow in the early part of the season. Resident bird game licenses show an increase of 1,252 over 1920. The result, however, shows a slight falling off in the total revenue obtained from licenses and permits.

REVENUE FROM GAME AND FUR-BEARING ANIMALS

As previously stated the revenue is much in excess of that collected in any previous year. This is due to the tax on the pelts of wild animals which amounted to \$32,236.13. This added to the revenue collected from the usual sources, including fur dealers' and fur buyers' licenses gives a total of \$79,156.24 collected for the year 1921. Expenditure being \$38,002.12 leaves a balance over and above the amount paid out for the administration of the Game Act of \$41,154.12, making a total surplus of \$114,869.50, over and above expenditure since this branch was organized.

The following licenses were issued to Treaty Indians free of charge on the strength of certificates from their agents, as provided for by section 19c of the Game Act:

Resident farmers' big game licenses, 128.

Respectfully submitted,

BENJ. LAWTON,
Chief Game Guardian.

PRAIRIE FIRES REPORT, 1921

I am very pleased to report that up to the month of September there were very few fires of any consequence. This portion of the year was very similar to that of 1920 and previous years. On or about the middle of September, fires were kindled in various sections, but the month of October was one of the worst months for prairie and ground fires that has been experienced in this province within my recollection. There was practically no moisture in the soil, and where it was of a peaty nature, a match, live coals, or sparks from an engine frequently started fires in the soil, which were permitted to burn and not being extinguished by those living in the vicinity, the result was that as soon as the native grasses became sufficiently dry to burn, the fire in the soil ignited the grass and a prairie or bush fire was soon sweeping over the country. Where an attempt was made to extinguish the fire, it was checked, but being established in the soil, it continued to smoulder until another high wind fanned it into flame and again ran at large over the district, resulting in the destruction of buildings, grain and hay stacks, to say nothing of fencing and valuable timber and fire-wood. The extent of these losses cannot be estimated, but the situation is such as to cause serious thought as to the possibilities for the coming spring, in the event of the snowfall being below the average. Many of these fires burning in the soil will continue to burn until the spring of the year, when, as soon as conditions are favorable they will again spread, unless some action is taken to extinguish them in the meantime. It is regrettable that many municipalities failed to exercise the powers given them to pass by-laws and institute means for the extinguishing and control of such fires. Many acres of valuable vegetable mould were consumed, thereby lessening the fertility of such land. The pall of smoke hanging over sections of the country was terrifying to many persons, as they were unable to determine as to how close the fire or fires might be to them.

The plowing of fireguards did not have the usual effect of checking these fires, as with the high winds which prevailed on several occasions, sparks blown across the guards immediately resulted in fires spreading beyond the point where it was hoped that the guard would check it. Add to this the scarcity of water in many wells, sloughs and lakes and you will see that the situation was of a very serious nature.

To prevent, as far as possible, a recurrence of such conditions, legislation should be adopted for the extinguishing of such fires by the municipality or Government, and the cost assessed against the municipality. In any event, where fires are burning in the soil at the present time in any municipality, it should be compulsory for the municipality to have the same extinguished. It would be well, also, I think, to consider the advisability of assessing the cost of extinguishing any fires against the person or persons responsible for kindling the fire.

The valuable co-operation of the Provincial Police and Royal Canadian Mounted Police, to say nothing of the voluntary fire guardians in the districts affected, in extinguishing and controlling these fires was greatly appreciated. On the whole, the situation was much more serious than was generally realized.

The Prairie Fires Ordinance is not sufficiently comprehensive to meet conditions which existed, as this ordinance was originally framed to meet conditions in a prairie country only. I would, therefore, strongly recommend the adoption of legislation of a more restrictive nature and sufficiently elastic to meet any ordinary or unusual condition.

As in previous years, this branch of your Department has continued the inspection of railway fireguards, and although there were a greater number of fires kindled by railway engines than in former years, this was due to the conditions which existed as previously stated during the month of October.

The convictions reported and the total penalties imposed for the years 1907 to 1921 are as follows:

Year	No. of Convictions Reported	Total	Average Fine
1907	33	\$ 741.00	\$ 22.45
1908	105	1,570.00	14.95
1909	94	1,796.00	19.10
1910	247	4,247.38	17.20
1911	33	565.00	18.25
1912	56	1,008.00	18.00
1913	48	948.75	20.52
1914	89	1,395.93	15.68
1915	39	681.16	17.47
1916	113	2,121.19	18.77
1917	35	888.00	25.37
1918	40	946.90	23.67
1919	35	958.50	24.55
1920	11	224.60	20.41
1921	..	445.25	.....

Respectfully submitted,

BENJ. LAWTON,

Chief Fire Guardian.

Report of the Women's Institute Branch

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I beg to submit herewith a report of the Women's Institute Branch for the year 1921.

Women's Institute work in 1921 covered wide fields. Various projects and departments of work were organized that the interests of Alberta might be better served. An excellent organization of standing committees was completed which co-ordinated the work throughout the province and increased the value of the Women's Institute service.

The appreciation of the institutes by the women of the province is demonstrated by the fact that during the year forty-eight new institutes were organized, making a total of three hundred and thirty institutes in Alberta, with a membership of approximately 15,300 women.

This report covers a period of economic readjustment which has left its mark on every community. In this instance the social contribution of the Women's Institutes has in no small measure meant that a sane balance of those qualities necessary for happiness and optimism has been generally maintained.

The Women's Institutes have endeavored to utilize the intelligence that exists in every community; to bring that intelligence to focus in the common gathering place—the monthly institute meeting; to direct the attention of the women in the community to their civic, recreational and educational needs and by this interchange of ideas to discover the means of meeting those needs.

DEMONSTRATION AND LECTURE WORK

In 1921, gratifying extension work was accomplished. The institutes proved their worth as extension co-operative units. The local institute was responsible for the advertising of the short courses or educational lecture and the provision of the hall and necessary equipment. Extension work was carried on during the months of May, June, July, August, September and October.

No. of Foods and Cookery Short Courses	25
No. of Demonstration-lectures given at Foods and Cookery Short Courses	52
Total attendance at meetings	1,924
Average attendance	37
No. of Sewing Courses (10 days' duration)	4
No. of Sessions	80
Total attendance at Sewing Courses	1,760
Average attendance	22
No. of Home Nursing Short Courses	14
No. of Demonstration-lectures given	28
Total attendance	1,064
Average attendance	38

ANNUAL REPORT, 1921

59

No. of Handicraft Short Courses	6
No. of Demonstrations given at Handicraft Short Courses	21
Total attendance	280
Average attendance	14
Total attendance at all Short Courses	5,028
No. of Single Demonstration-lectures given	214
Total attendance at Demonstration-lectures	7,490
No. of Lectures given	68
Total attendance at Lectures	2,718
Average attendance at Lectures and Demonstrations	37
No. Constituency Conferences Visited	35
Total attendance at Constituency Conferences	2,266
Total attendance at Short Courses, Lectures and Demonstrations	17,302
No. places visited	360
No. of meetings held	463

As a result of a request from the headquarters of United Farm Women of Alberta, every local association was given the opportunity of securing upon application, a short course or educational lecture. They were also given the privilege of dictating the nature of work the short course or lecture should cover. In a number of cases two or more locals met together to receive instruction. The following statistics give a summary of the U.F.W.A. work:

No. of applications received for Home Nursing Lectures and Short Courses	9
No. Short Courses given	6
No. Single Lectures given	2
No. Short Course appointments cancelled by local U. F. W. A.	1
Total attendance	280
Average attendance	20
No. applications received for Foods and Cookery Short Courses and Lectures ..	4
No. Short Courses given	2
No. Single Demonstration-lectures given	1
No. Short Course engagements cancelled by local U. F. W. A.	1
Total attendance	109
Average attendance	22

The total attendance at all meetings held under the direction of the Women's Institute Branch in 1921 was 17,691. This large attendance means that a wider use of better practices in home-making is guaranteed in Alberta.

The demonstration-lectures and short courses in home nursing were given with the co-operation of the Public Health Department. Very enthusiastic reports were received from communities who profited by these lectures.

The information given at the short courses and lectures on foods and cookery was mostly relative to the importance of milk and vegetables in the diet and children's food.

The two-week demonstration-lecture course in clothing was organized in 1921. The programme is a very practical one and has met with much appreciation.

For the first time in the history of Alberta extension work, a number of handicraft short courses was given to girls' clubs and in a number of communities suffering from drought conditions this instruction has proved a means of enabling some of the girls' club members to spend their time to remunerative advantage.

Among the subjects treated at lectures are the following:

- " Selection of Textiles."
- " Better Times for the Housekeeper."
- " Getting the Most for Our Money."
- " The Family—Its Development—Homes Past and Present."
- " How to Construct and Use a Home-made Fireless Cooker "
- " Kitchen Ways and Wrinkles."
- " A Woman's Problem on a Dairy Farm."
- " Nurture versus Nature."
- " Making our House a Better Home."
- " The House We Live In."
- " The Proper Diet and Care of Children."
- " The Food Problem—Its Relation to Health."
- " Community Work."
- " Clothes and the Girl."
- " The Principles of Dress Design and Function."
- " Factors for Interesting Living for Everyday."
- " Rural Education—Its Relation to Home and School."
- " Sewing Hints and Remodelling Garments."
- " The Laundry Business in the Home "
- " Labor-saving Devices."
- " Simple Entertaining."
- " Training of Children."
- " Citizenship."
- " Home Ideals."
- " The Importance of Milk—Its Food Value, Products, Use, and Care."
- " Our Natural Resources—The Child."
- " Our Natural Resources—Air, Water and Sunshine."
- " Our Natural Resources—Health."
- " The Place of Prevention in Modern Medicine."
- " Child Welfare."
- " Hot School Lunches."
- " Home Nursing Emergencies."
- " Hygiene and Sanitation."
- " Housewifery."
- " Rural Sociology."

Every care was taken to make the speakers' and demonstrators' itineraries topographically contiguous that both time and money might be conserved.

A speakers and demonstrators' conference was held May 3, 4, 5, 1921, to provide a means of giving the workers a conception of the conditions throughout the province. This conference might be called a Training Short Course School for extension workers.

LOAN COLLECTION

Any person in the province may take advantage of the Women's Institute Loan Collection, providing borrowed material is returned within two weeks' time. The loan collection is made up of bulletins, reference books, and clippings from magazines, newspapers, pamphlets, speeches and addresses. An endeavor is made to supply information on practically every line of activity characteristic of a rural community. During 1921 approximately nine hundred references were sent out during the year. These figures demonstrate the usefulness of the service.

TRAVELLING LIBRARIES

Travelling libraries have been very popular in 1921, in fact the demand is much greater than the supply, and it is recommended that special attention be given this matter in the future. The present library system is satisfactory, the recommendation refers only to an increase in the number of libraries.

BULLETINS

During the year the following bulletins were distributed:

3000 copies of "Home Drying of Fruits and Vegetables," by B. McDermand.
3000 copies of "Canning of Meats, Vegetables and Fruits," by B. McDermand.
4000 copies of "Care of the Baby," by Dr. H. McMurchy.
4000 copies of "Community Song Bulletin."
1000 copies of "Home Laundry—Methods and Equipment,"
by B. McDermand.

ANNUAL PROVINCIAL CONVENTION

It was agreed unanimously, both by the delegates from every part of the province and the visitors from all parts of the Dominion, that the seventh annual convention of Alberta Women's Institutes held in Edmonton at the University of Alberta was without a doubt the best meeting or convention they had ever attended.

There were several factors that combined to make this event such a tremendous success. Undoubtedly the first was the masterly organization of the programme by the Superintendent who had not left out one single detail in the completion of it. The next was the carrying out of this programme almost to the minute by the President, Miss Isabel Noble, whose chairmanship was splendid. Then there were the women themselves, each a leader in her own community, each an interested, earnest, unselfish, energetic, and kindly institute member.

It might be said that the seventh annual convention of Women's Institutes was a conference of leaders. It was not a convention of reports, as this practice was condemned by the previous convention. It was rather a course of instruction in citizenship.

SONGS THAT LIVE

The name of Mrs. Rose Morgan will live long in the hearts of those members of the Women's Institutes who have had the privilege of hearing this remarkable woman, who has taken up as her life work the gospel of song. Never has there been such singing as that led and inspired by her.

Her intervals during the convention seemed to interpret the spirit of it to music, a spirit of service. Her inspiration ran through it like the musical theme of a great opera, a theme that said always "Go back to your community and express to it through your song, your love of country, your love of home."

UNIVERSITY OF ALBERTA

Never were delegates billeted so comfortably as those of the A. W. I. at the University of Alberta. Every facility was placed at their disposal for personal comfort, it was so convenient to the place of meeting. There were rooms for committees, there was the atmosphere of refinement, education and beauty of scenery and last, but not least, there was the thrill of having the finest meals prepared, and the fine opportunity of comradeship and conversation of the meal hour. Dean Howes, Mr. West, Miss Russell and the members of the staff were indefatigable in their efforts to make this part of the convention a success and in this they succeeded to a maximum degree.

HANDICRAFTS EXHIBIT

One of the features of the convention was the handicraft exhibit which is a new division of women's Institute work. This was under the direction of Mrs. McIvor, of Cowley, who had brought with her from that district a very fine exhibition of articles made by the Doukhobors in that vicinity. These included fine towels, lace, etc., made from the flax and some very beautiful rugs. Provost Girls' Club contributed some specimens of basketry, also some boxes of home-made candy. Strathcona Hospital loaned a display of articles made by the soldiers inclusive of toys, trays, etc., Mrs. Towns, of Coronation, brought along a Swedish exhibit, and there were some articles made by the feeble-minded children in Edmonton. The Edmonton Handicraft Guild also contributed to this feature, and its success was shown in the fact that there was always a crowd in this room.

HEALTH AND CITIZENSHIP EXHIBIT

A good citizenship campaign bringing out the fundamentals of cleanliness, thrift, health, home, personal appearance was depicted in a display of posters. It was recommended that the Institutes purchase the Health Crusade series for their local schools and co-operate with the teacher in encouraging good health habits.

MODEL RECORD EXHIBIT

An exhibit was on display showing model club records. This display was of excellent assistance to all local institute officials.

RESOLUTIONS

There was no orgy of resolutions, no "going on record" innumerable times for this and that reform.

It has been the policy of the A. W. I. to have few resolutions and to have these followed up. Only a few resolutions were presented at the convention. The one regarding the formation of an order of nursing housekeepers, these to be under the supervision of the department of health and each graduate to have a term of four months of practical training in the hospital, which was discussed at the district convention, was passed unanimously. Another resolution seeking to amend the law to raise the age at which tobacco may be procured by minors from sixteen to eighteen was passed.

Henceforth, there will be no constituency reports read at the annual convention. These will be presented in detail at the constituency conferences.

Another resolution was regarding the censorship of moving pictures, and the showing of British and Canadian films was discussed and referred back with the suggestion that in Alberta there exists already a censor board; that the women co-operate with this board and with local picture houses in an effort to obtain the best pictures for the community.

Compilation of the early history and legends of Alberta will be a part of the work of the A. W. I. for the coming year. It was felt that Alberta abounds in Indian legends, historic land marks and in tales of pioneer trail and trappers' adventure, and that these tales are passing as the pioneers die and the preservation of landmarks is being neglected.

The members reaffirmed unanimously their stand on the prohibition question.

ELECTION OF OFFICERS

Five of the members of the executive went in office again by acclamation. The personnel of the present executive is:—

Miss Isabel Noble, Daysland, Provincial President.
Mrs. W. Fleming, Alliance, First Vice-President.
Mrs. A. H. Rogers, Fort Saskatchewan, Provincial Secretary.
Mrs. Jas. Boyd, Vanrena, Director District No. 1.
Mrs. C. A. Gates, Stony Plain, Director District No. 2.
Mrs. Wm. Huyck, Strome, Director District No. 3.
Mrs. J. N. Beaubier, Champion, Director District No. 4.

STANDING COMMITTEES

The convenors of standing committees gave excellent reports containing good advice on the development of their respective departments in local institutes. The plea for co-operation and co-ordination ran through every report. The Provincial Convenors of Standing Committees for 1921-22 are as follows:

Child Welfare and Public Health—Mrs. D. R. McIvor, Cowley.
Education and Better Schools—Mrs. F. Hughes, Cavendish.
Legislation—Mrs. H. J. Montgomery, Wetaskiwin.
Immigration—Mrs. Wm. Barss, Delia.
Household Economics—Miss B. McDermand, Edmonton.
Agriculture—Mrs. Jas. McKay, Provost.
Publicity—Mrs. J. F. Price, 1220 Fifteenth St., W. Calgary.
Canadianization—Mrs. M. Morley, Verdant Valley.

GIRLS' CLUB SECTION

Two whole days of the convention were given to girls' club work. There were fifty-one girls' club delegates present, and each club gave an account of their year's activities. The work accomplished by these clubs is most encouraging and speaks well for the institutes in the future.

The officers elected for the ensuing year are as follows:—

President—Miss Minnie Page, Elnora, Alberta.
First Vice-President—Miss Thelma Atkins, New Dayton.
Second Vice-President—Mrs. Clara Johnson, Alliance.
Secretary—Miss Olive J. Fleming, Alliance.
Directors: District No. 1—Miss Edith Hoy, Waterhole.
District No. 2—Miss Helen Baron, Stony Plain.
District No. 3—Miss Blanche Cox, Edgerton.
District No. 4—Miss Daisy Hummel, Milk River.

FEDERATED CONVENTION HELD IN EDMONTON

The Federated Women's Institute Convention of Canada was held in Edmonton the week previous to the Provincial convention. The convention was one of importance, as it was attended by representatives from all parts of the Dominion. Many Alberta women took advantage of the occasion. The Federated Institutes represent one hundred thousand Canadian women, and it was a matter of pride to this province that this organization was the culmination of the efforts of Alberta.

The national and also the international character of the Women's Institute was impressed upon Women's Institute workers of Alberta by the federated convention. There are Women's Institutes in the United States, Ireland, Belgium, England, Wales, Scotland and France. The Women's Institute idea which was first started in Ontario, over thirty years ago, has proven its worth and propagated its kind in the progressive countries of the world.



"HAPPY IS THEIR LOT"--AN ALBERTA FARM SCENE

DISTRICT CONFERENCES

At the 1920 Provincial convention the delegates decided that three district conferences should be held in 1921, and accordingly conferences were held in Women's Institute Northern District No. 2, at Tofield, March 15, 16; Women's Institute District No. 3, at Wetskiwin, March 17, 18; Women's Institute District No. 4, at Taber, March 22, 23. These conferences were held under the supervision of the district directors, Mrs. C. A. Gates was chairman of the District No. 2 conference, Mrs. A. A. Towns and Mrs. F. Hughes were chairmen of No. 3, and No. 4 respectively.

The programme of the three conferences in the main part was planned with the idea in mind of the discussion of institute work in detail—from a technical viewpoint, in order that the time of the annual convention would not be given over to reports from various branches or constitutional difficulties.

The three most interesting constituency reports of each conference were recommended for presentation at the annual convention. A number of resolutions were fully discussed and those of provincial importance were forwarded for the approval of the provincial convention.

Lectures were given on such subjects as the school curriculum, health service, legislation affecting women, etc., by experts along these lines and general discussion followed.

At the conference centres the women met with splendid hospitality and every one attending expressed her appreciation of the benefits derived. Owing to financial responsibilities and the lack of time, districts No. 2 and No. 3 decided not to hold conferences in 1922, while district No. 4 was most emphatic concerning the urgency of the institution of an annual district conference.

CONSTITUENCY CONFERENCES

During the months of September and October thirty-five Women's Institute constituency conferences were held and as a number of these conferences were an assembly of delegates from two or more constituencies the figures given are in a measure misleading. Forty-two Women's Institute constituencies participated in and were fully represented at the conferences. These conferences are of inestimable value in developing leadership among our women, and are also a means of creating fellowship through a sense of common interests and aims.

The organization for carrying on both the propaganda and practical work in connection with the Women's Institute standing committees was completed at the constituency conferences held in 1921. At each conference a constituency chairman for each of the standing committees was elected by the assembled delegates. These chairmen are members of their respective provincial committees, namely: Legislation, Canadianization, Education and Better Schools, Public Health and Child Welfare, Household Economics, Agriculture, Immigration and Publicity.

The usefulness of the constituency chairmen is very evident. They are directly in touch with each Institute in their constituency, and their very proximity and enthusiasm together with their information cannot help but encourage the institutes to take up at least one feature of the work of each committee. At last the organization of a standing committee has got down to bed rock, and the foundation is securely laid for real functioning in the community whether it be situated in city, town or isolated rural district.

LOCAL INSTITUTE ACTIVITIES

It will be impossible in this report to measure the extent and completeness of work accomplished by local institutes, but in justice a few instances of achievement must be reviewed. The essay to trace the practices used in developing the various definite institute projects will be limited by space and undesirable repetition of detail.

Without the friendly and courageous spirit, earnestness, patience and industry of Women's Institute members, the success of 1921 would not have been possible. To carry on for the good of the whole people was uppermost in the thoughts of every local institute.

The majority of institutes had well defined objectives as well as projects restricted and tentative in nature on account of both the time necessary to bring them to a successful issue and the newness of their character. In all cases an attempt was made to meet the need and solve the problems of the community, in fact each institute has a different story of usefulness.

FINANCIAL RESPONSIBILITIES

Although the raising and expending of money is only a corollary to their main objects the Women's Institutes of Alberta raised in 1921 a total of \$90,054.25 for community and charity purposes. To this amount, \$8,717.50 may be added, this sum being the approximate amount raised by Women's Institute Girls' Clubs.

PUBLIC HEALTH AND CHILD WELFARE

The majority of institutes are exerting every effort to establish a regard for health and child welfare work in their own community. As local child welfare propagandists the institutes are rendering practical assistance to official child welfare agencies and are a means of disseminating up-to-date information necessary for home and community welfare of children.

The Child Welfare Poster exhibit displayed at the Women's Institute Annual Convention stimulated much interest in child hygiene and a number of institutes plan to place health crusade posters in their local schools. There are very few institutes which have not given a prominent place to Child Hygiene and Health on their study programme.

In 1921 approximately thirty-seven baby clinics were held in the province at the suggestion of and with the assistance of local Women's Institutes. Exhibits showing the proper feeding of children have been a feature of a number of local clubs.

In their practical child welfare and health work, the Women's Institutes have proven their worth as educators, and their local administration in safeguarding the health of children is to the best interest of every community.

AGRICULTURE

The inspirational value of the study of various features of agricultural work has been demonstrated by many rural institutes. Special study of poultry on the part of an institute has brought up the standard of poultry throughout the district and analogous evidence may be obtained concerning many other agricultural activities.

Horticultural fairs are an annual feature of many institutes, and the enterprise has met with much appreciation.

The local institutes support the school fairs, in fact, in many instances take all local responsibility connected with them.

HOUSEHOLD ECONOMICS

The dissemination of knowledge relating to all branches of home economy is the aim of each local institute; and a better understanding of the economic, aesthetic and hygienic value of foods, clothing and shelter is now evident in many institute communities. Every institute has been advised to establish at least the nucleus of a reference library on home problems.

A higher standard of homemaking can only be obtained by a more thorough scientific knowledge of the functions and administration of the home. The influence of the institute in this direction will never be fully estimated. The institute is something more than an academic and technical school. It is a propagandist, an administrator and a safeguarder of those things most necessary to the satisfaction and contentment of every home.

EDUCATION AND BETTER SCHOOLS

A careful resumé of the Women's Institute Better School project would make encouraging reading, for it can be properly said that this activity is one of the most profitable departments of work ever taken up by a woman's club. Over one-half of the institutes in the province have participated in rural school betterment plans.

The work is very practical and is felt mainly along two lines—sanitation and hygiene, and aesthetic culture.

Through the influence of the local institute, hot school lunches have been installed in many schools, and the promotion of this idea has in a number of cases resulted in the institute raising funds for the building and equipment of a school kitchen. In such instances the school is often used as a community centre.

Victrolas, books, magazines, playground equipment, good pictures, flags, pencil sharpeners, bubble fountains, plants and curtains have been placed in many schools and provide a means of stimulating in the child a regard for refined surroundings, health and the worth of conveniences. Nor has the value of the school competition been forgotten. In 1921 thirty-two institutes gave prizes for various accomplishments.

Many more services, too numerous to mention, have been carefully planned and carried out by the institutes. Each new plan designed for the welfare of the children has meant not only benefit for the children themselves, but renewed interest in child welfare on the part of the parents. The results so far seem to indicate that the children are taking their part as teachers. Through the channel of the improved rural school many homes are being benefited by the influence of the better homes in the locality, thus attaining a more congenial social condition which so helps to develop the social virtues necessary in a happy community.

IMMIGRATION

The Immigration Committee of each institute is responsible for the welcoming of new settlers in their district. The Women's Branch, Department of Immigration, Ottawa, sends information concerning all women who come to Alberta under their auspices to the Women's Institute Branch, and the head office writes directly to the institute nearest the settler's new home and that institute extends its hospitality to the stranger.

CANADIANIZATION

Many of the institutes are endeavoring to see that their communities celebrate the days set aside to commemorate national events in a proper manner. The provincial convention went on record as approving of and strongly advising that the event of naturalization should be made impressive by suitable ceremony.

It is the purpose of the local institutes to meet the foreign-born in a spirit of friendliness at every meeting place—the school, church, shopping centre, bazaar, etc. One institute where many nationalities live gave a festival week and each nationality was responsible for a day's programme.

LEGISLATION

The legislation committee of the majority of the institutes is very active. It is their object to keep the women of the community well informed on the legal status of women and children in Canada.

PUBLICITY

Under the direction of the provincial convenor of publicity, Mrs. J. F. Price, systematic publicity has been established. Institute news is now published weekly in four daily newspapers in the province, and special articles are published in various Canadian, British and American periodicals. Each institute publishes its important news in the local newspaper.

ORGANIZED RECREATION

Co-operation and the spirit of sportsmanship is being developed in many communities by the local institute. In 1921, sixteen institutes reported the institution of an annual sports day and many more related their efforts to ward the encouragement of organized recreation. Basketball, baseball, skating rinks, curling rinks, community recreation grounds and community picnics have received the unlimited support of many local institutes.

REST ROOMS AND COMMUNITY HOMES

There are now forty-eight institute-mothered rest rooms and community homes in Alberta, and nearly one-half of this number is owned by the local institute. In a few cases the community homes are worth from \$3,500 to \$6,000; however, the usual valuation is from \$500 to \$2,000.

The kind of use the community home is put to depends upon the needs and wishes of the members of the community. In some localities the community home is not only a social manifestation, but is also used as recreational headquarters, co-operative market place and library.

RELIEF AND DONATIONS

The exact value of institute relief and charity work is difficult to compute. However, it can be safely reported that a generous apportionment of the \$98,771.75 which was raised by the institutes and girls' clubs in 1921 was used for charitable purposes.

This year the institutes have not only contributed money to various charitable funds, but have also sent a large supply of second-hand clothing for relief in the drought-stricken areas.

OTHER LOCAL ACTIVITIES

By the virtue of their constitution, Women's Institutes are centres for educational extension work. The visits of experts stimulate study throughout the year, and the "study programme" of the institute is its most important and beneficial feature.

Many institutes are a training school in public business and real civic devotion has been stimulated—dozens of Women's Institutes are endeavoring to place women on the school board, municipal council and hospital board.

It is impossible to even mention all the activities and projects of local institutes; the establishment of libraries, town parks and community newspapers are probably among the most notable features.

Many of the institutes have encouraged amateur dramatics as a form of community expression. The work has met with good response.

The Edmonton City Institute has established a women's exchange. A woman has been employed, to be constantly in charge. The country institutes may make use of this exchange for the sale of any handicraft work. In a very practical way this new project is providing an organization through which "town and country meet."

WOMEN'S INSTITUTE GIRLS' CLUBS

During the year 1921, the number of Women's Institute Girls' Clubs was increased to fifty-five, with a membership of approximately 990 girls.

The work taken up by the clubs varied according to the age of the members and the needs of the community. A number of the senior clubs had objectives very similar to those of local institutes. In the main, however, the work was mostly in regard to organized recreation and study along dramatic, literary, art and household economic lines. Work in handicrafts was emphasized and competitions in practical household economic activities were the order of the day. At the present the girls' club is the avenue through which the rural girl may obtain assistance in procuring technical knowledge of household economy.

The Girls' Club constitution is such that self-government is taught, and the organization is safe-guarded by the appointment of a local supervisor by the girls themselves. This democratic spirit has done much to promote satisfaction and success in the clubs.

Evidence of the worth and possibilities of the Girls' Clubs was fully shown by the reports given at the annual convention. The clubs are excellent training schools. A fine sense of community responsibility has been developed. In 1921, the Girls' Clubs raised a total of \$8,717.50, which was expended for the benefit of the community and group activities.

In conclusion, permit me to acknowledge, with deep appreciation, the loyal support and efficient service rendered by those associated with me in the administration of this branch.

Respectfully submitted,

BESSIE CAMERON McDERMAND,

Assistant Superintendent.

Report of the Crop Statistician

Edmonton, December 31st, 1921.

H. A. CRAIG,
Deputy Minister of Agriculture

SIR,—I beg to submit herewith the Crop Statistician's annual report for the year 1921.

The season of 1921 has been one of the most trying in the history of the Province of Alberta. The winter of 1920-21 was a fair one for stock, with plenty of feed in most parts of the province. Cattle, horses, and sheep came through the winter in very good condition and with few losses.

The spring of 1921 opened very favorably for seeding operations, and over the province, as a whole, there was a large acreage sown to the several varieties of grain. The spring season was such that the farmers were on the land as early as in the average Alberta seasons. The acreage sown was larger than in any previous year, and in the early part of the season the crops developed in a very promising way all over the province.

In order to produce crops successfully in the province, it is essential that there should be a reasonable amount of rainfall during the growing months of May, June and July, and the forepart of August. Given a reasonable amount of rainfall, there are elements in the soils of Alberta to produce marvellous crops of highest quality grains.

The generally favorable spring outlook was followed by summer climatic conditions which brought to a portion of the province partial crop failure. The needed rains failed to come in sufficient quantities to make a crop. The south-eastern portion of the province was badly affected by the adverse weather conditions, and the crops produced were very much below an average. In Central Alberta the conditions were more favorable and there was a very fair crop. In Northern Alberta, there was plenty of rainfall to ensure a crop and the yields were good.

About harvest time there was a serious decline in grain prices, and also in live stock prices. This had a depressing effect upon the farmers' business, and coming at the same time as partial crop failure, has had the wide-spread effect of steadying down the agricultural business, after several years of expansion and prosperity, consequent upon war and after-war conditions. The year 1921 has turned the thought of many of our farmers in two directions, both of which will place their mark upon the future of Alberta. Under irrigation this year very fair crops were produced in different sections of Southern Alberta, and it

would look as if irrigation farming would play an important part in the future of agriculture in this district. The conditions existing in 1921 have intensified the efforts connected with irrigation projects, and when these are carried out they must ultimately mean improved conditions. Another far-reaching effect will be that the thoughts and activities of farmers will turn more towards mixed farming, and away from exclusive grain farming. This year, in the sections of Alberta where mixed farming was followed to a large extent, the country is in better shape than where grain-growing was the only effort of the farmer. Alberta's agricultural interests will be advanced materially when farmers generally produce upon their farms more of the commodities essential to their every-day living—milk, butter, eggs, pork, beef, mutton, and vegetables. In giving attention to grain-growing on big acreages, some of these old-time homely essentials to successful farming have been overlooked.

In the central and northern parts of Alberta, the hay crop in 1921 was fair. The low price for oats at threshing time induced many farmers to use their crops of sheaf oats as fodder. In the irrigated sections of Southern Alberta, a fair crop of alfalfa was produced. It is estimated that over 30,000 acres were sown to alfalfa this year.

Potatoes were a good crop in Central Alberta, and large quantities were exported. There is also available for spring export trade quantities of potatoes stored during the winter.

Continued success in the dairying business has encouraged the growing of forage crops, such as corn and sunflowers, and green oats. Some new varieties of clover are being grown successfully. An increasing number of silos is being built, and experiments with different classes of ensilage are being carried on, which are beneficial to the dairying industry.

The crops of Alberta for 1921 are estimated at approximately the following figures:

	Acres Sown	Yields	
Wheat	4,649,000	53,000,000	Bus.
Oats	2,139,000	64,000,000	"
Barley	523,000	11,650,000	"
Rye	138,000	2,000,000	"
Flax Seed	28,000	171,000	"
Mixed Grains	9,800	223,000	"
Peas	2,350	56,600	"
Potatoes	51,300	8,100,000	"
Turnips and Roots	8,200	1,259,000	"
Hay and Clover	454,000	454,000	Tons
Alfalfa	30,000	52,500	"
Fodder Corn	6,900	70,000	"
Grain Hay (Green Oats, etc.)		1,133,000	"

At the deflated prices of the late fall of 1921, an estimate of the value of this crop is placed at approximately \$125,000,000.



CATTLE ENJOYING JANUARY SUNSHINE IN ALBERTA

A fair estimate of the average yields per acre of the different classes of grain has been compiled from the threshers' returns covering the entire province.

No.	Constituency	Spring Wheat	Winter Wheat	Oats	Barley	Rye	Flax
1	Medicine Hat	7.16	12.20	14.98	14.15	10.04	3.15
2	Warner	7.52	6.80	14.11	9.46	6.56	4.90
3	Cardston	13.85	27.88	26.42	13.40	15.19	3.81
4	Pincher Creek	10.84	17.61	21.94	13.95	13.65	5.79
5	Macleod	7.02	30.00	12.66	8.80	15.06	....
6	Claresholm	9.06	7.96	10.35	6.68	6.77	....
7	Nanton	8.87	....	9.68	4.76	4.91	....
8	Little Bow	7.10	8.33	12.65	8.24	10.25	....
9	Taber	7.25	7.74	12.53	9.17	8.81	4.68
10	Redcliff	6.27	....	10.33	11.58	7.40	4.58
11	Bow Valley	10.98	....	23.18	17.32	6.33	5.01
12	Gleichen	11.30	9.34	21.18	11.07	9.00	6.63
13	High River	9.53	20.00	20.00	11.17	10.69	....
14	Okotoks	13.50	8.00	25.93	18.14	17.68	....
15	Rocky Mountain	11.22	13.74	21.50	13.85	8.43	....
16	Calgary	13.56	....	22.90	11.17	15.90	....
17	Cochrane	12.85	12.50	22.88	16.11	18.71	....
18	Didsbury	9.60	13.01	21.71	16.04	18.06	6.00
19	Handhills	13.35	13.34	15.26	8.90	5.04	3.16
20	Acadia	7.93	....	14.31	8.98	9.40	3.79
21	Coronation	11.46	8.71	20.86	14.91	9.80	4.75
22	Stettler	11.20	11.65	18.00	14.45	11.72	8.49
23	Olds	11.39	....	26.37	21.67	15.89	10.00
24	Innisfail	16.87	15.00	32.59	23.50	17.54	5.11
25	Red Deer	18.77	26.57	32.05	24.32	13.97	....
26	Lacombe	14.87	....	30.30	24.32	15.77	9.75
27	Ponoka	18.64	....	33.64	28.00	14.19	11.00
28	Wetaskiwin	18.56	....	33.65	26.34	18.34	....
29	Camrose	18.26	....	35.52	27.37	18.62	4.73
30	Sedgewick	13.84	12.90	24.94	18.19	14.44	6.66
31	Ribstone	14.52	16.11	26.93	18.33	13.74	7.16
32	Wainwright	16.46	16.73	32.09	22.63	13.55	7.82
33	Alexandra	22.24	29.90	38.88	27.44	14.12	11.25
34	Vermilion	19.65	....	36.07	24.08	18.85	19.50
35	Vegreville	23.06	36.26	37.97	27.82	17.18	20.00
36	S. Edmonton	23.58	....	36.33	29.30	16.56	15.66
37	Leduc	21.47	....	27.04	21.41	15.77	....
38	Stony Plain	25.54	23.00	35.06	27.53	13.07	8.00
39	Edson	14.66	10.50	35.50	23.10	18.00	....
40	Lac Ste. Anne	22.50	....	32.34	22.93	21.17	15.00
41	Pembina	21.78	....	36.18	24.27	17.30	9.31
42	St. Albert	26.87	29.50	41.06	32.77	27.05	11.00
43	Sturgeon	25.14	19.59	37.77	28.66	19.62	12.00
44	Victoria	24.51	21.00	33.69	27.42	19.58	....
45	Whitford	20.68	23.19	32.19	26.14	13.17	8.25
46	Beaver River	21.45	21.00	28.77	24.92	19.66	....
47	St. Paul	23.19	....	36.41	21.78	18.63	....
48	Clearwater	22.09	....	38.88	24.21	20.64	....
49	Athabasca	22.64	....	37.05	26.93	18.96	9.16
50	Grouard	21.58	22.67	47.85	33.51	22.01	18.00
51	Peace River	24.66	36.86	46.39	26.94	21.42	12.66
52	Lethbridge	9.77	5.71	35.82	15.37	7.00	6.00
Average on total		11.76	16.98	30.13	23.56	11.07	4.78

SUMMARY OF CROP YIELDS FOR PAST ELEVEN YEARS

	Total Crop Area	Total Yield of Grain
1921.....	8,803,121	141,392,233
1920.....	7,916,482	215,648,744
1919.....	5,765,791	113,199,818
1918.....	6,355,843	93,275,863
1917.....	5,974,098	150,082,489
1916.....	3,821,476	111,735,729
1915.....	3,668,238	164,332,483
1914.....	2,586,169	58,895,709
1913.....	2,799,267	75,575,682
1912.....	2,391,752	64,465,058
1911.....	1,732,648	50,907,531

PRECIPITATION RECORDS, ALBERTA, COVERING THIRTY-FIVE YEARS, 1885 TO 1920.

	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
Banff .....	.....	.....	.....	.....	.....	9.91	10.44	.....	.....	.....	12.28	15.86	28.40	20.58	26.34	23.30	19.27	30.59
Calgary .....	.....	7.28	10.15	12.40	5.88	10.70	8.93	5.47	.....	.....	10.76	16.05	20.58	16.21	26.15	17.57	22.31	34.57
Edmonton	10.30	6.53	9.48	15.88	6.48	19.30	15.63	11.43	12.34	8.49	10.77	15.24	14.54	10.90	24.09	27.80	27.83	20.66
Medicine Hat	8.02	5.47	8.43	11.98	6.08	7.79	9.70	7.81	9.08	10.09	11.39	18.18	17.25	15.90	22.28	22.05	20.80	13.68
Macleod .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12.73	12.69	13.58	19.74	10.08	12.21	10.48
Lethbridge .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23.13

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Banff	24.80	14.80	16.00	14.88	23.54	21.05	21.56	16.32	19.17	19.07	16.37	17.69	23.36	25.24	19.28	18.19	14.68	18.96
Calgary	22.77	18.89	14.12	16.24	14.96	18.25	16.03	12.03	19.99	20.14	17.38	17.71	18.24	13.91	11.44	9.12	12.21	14.42
Edmonton	21.06	19.87	15.56	13.48	16.62	17.89	14.30	14.43	20.67	20.18	19.55	25.29	18.64	20.92	15.25	17.86	16.43	18.16
Medicine Hat	9.90	9.70	8.99	11.62	6.96	9.67	9.80	6.45	16.04	9.78	12.65	12.17	16.13	17.90	13.42	10.20	7.66	10.74
Macleod	9.73	5.34	11.63	20.82	12.40	18.11	16.05	8.57	24.34	12.71	17.49	20.50	16.57	24.45	14.48	9.70	12.39	15.00
Lethbridge	14.82	11.42	13.78	22.48	15.50	16.16	11.69	5.66	22.16	13.21	14.17	17.58	17.40	25.88	11.93	8.94	13.36	14.05

MAXIMUM AND MINIMUM TEMPERATURES AND PRECIPITATION FOR 1921

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Foremost	Max. 48 Min. -11 Prec. 1 55	.. .. ..	.. .. ..	67 .. ..	.. .. ..	92	100 .. ..	.. .. ..	.. .. ..	81 28 0 30	.. .. ..	.. .. ..
Lethbridge	Max. 50 Min. -6 Prec. 0 56	60 -11 0 47	61 -26 1 42	68 17 1 19	82 28 0 96	87 39 1 04	96 43 3 23	89 38 0 46	81 27 1 29	79 16 0 23	65 -32 1 09	57 -21 0 19
Medicine Hat	Max. 46 Min. -10 Prec. 0 09	57 -10 0 55	60 -18 1 65	69 9 1 75	89 28 1 62	96 47 1 40	101 45 1 85	96 43 0 53	79 29 1 80	81 28 0 42	68 -22 ..	57 -21 0 08
Vauxhall	Max. 44 Min. -13 Prec. 0 30	55 -14 0 60	55 -25 1 69	65 17 2 15	79 26 2 07	92 35 0 31	105 38 1 70	93 32 0 69	79 29 2 14	81 25 0 23	65 -27 1 41	51 -24 0 22
Macleod	Max. 48 Min. -12 Prec. 1 21	58 -13 1 15	60 -27 1 55	67 17 0 13	83 30 1 30	91 38 0 51	99 44 2 93	91 39 2 10	77 13 1 06	79 27 0 20	68 -30 0 92	55 -23 0 40
Pincher Creek	Max. 45 Min. -8 Prec. 1 13	58 -11 1 53	52 -23 3 48	61 19 1 16	74 27 2 32	81 39 1 30	90 37 2 33	86 35 0 26	70 22 1 93	73 22 0 03	63 28 2 55	51 -22 1 83
High River	Max. 48 Min. -11 Prec. 1 55	62 -16 0 85	56 -40 2 18	66 6 2 70	78 21 0 30	84 31 1 48	92 32 1 87	85 27 1 27	75 17 0 40	81 14 0 30	65 -34 1 58	57 -38 0 58
Okotoks	Max. 45 Min. -16 Prec. 0 65	54 -9 0 35	53 -29 1 65	63 18 1 47	77 26 0 31	84 37 1 41	93 42 3 16	86 36 3 76	70 24 0 57	79 25 0 50	65 -24 1 05	50 -29 0 25

[illegible]

MAXIMUM AND MINIMUM TEMPERATURES AND PRECIPITATION FOR 1921—Continued

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Lacombe	Max. 50 Min. -30 Prec. 0.68	55 -23 0.42	52 -33 1.39	67 11 1.25	77 22 1.69	92 29 1.85	95 30 3.28	87 28 0.98	77 20 1.49	83 14 0.00	26 -25 0.60	47 -37 0.23
Wetaskiwin	Max. 40 Min. -35 Prec. 0.45	56 -22 0.60	50 -25 0.80	68 10 1.20	78 22 1.25	85 32 2.71	90 40 2.20	85 33 0.47	81 22 1.62	76 18 0.05	60 -24 0.30	55 -42 ..
Edmonton	Max. 41 Min. -33 Prec. 0.79	53 -23 1.36	55 -21 1.65	64 19 0.33	78 27 1.27	82 33 3.08	87 40 3.65	81 37 1.56	74 19 0.66	81 18 0.08	52 -18 0.63	47 -37 0.16
Lloydminster	Max. .. Min. .. Prec. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
Nordegg	Max. 41 Min. -24 Prec. 0.90	53 -22 0.50	52 -38 1.95	60 -4 2.40	71 20 2.63	93 26 1.79	85 31 3.73	79 28 1.74	68 17 0.69	79 9 0.05	58 -33 1.25	45 -45 0.15
Rocky Mountain House	Max. .. Min. .. Prec. ..	56 .. 1.05	61 -43 2.00	67 1 1.82	77 22 1.09	.. .. ..	.. .. ..	85 25 1.94	75 15 0.80	79 9 0.05	62 -33 0.60	59 -44 ..
Edson	Max. 42 Min. -25 Prec. 0.65	58 -26 0.80	57 -34 0.80	70 11 1.22	80 23 2.95	81 30 2.01	84 30 2.97	82 34 3.54	74 20 1.13	77 12 0.05	60 -26 0.50	51 -43 0.13
Jasper	Max. 41 Min. -23 Prec. 2.61	54 -17 1.10	.. .. ..	68 11 1.11	75 27 0.87	79 30 0.53	88 33 1.83	85 32 1.09	76 20 1.86	74 16 1.85	59 -22 1.46	47 -39 0.58

Athabasca	Max.	38	53	55	65	80	85	85	82	74	80	48	47
	Min.	-42	-42	-29	12	22	23	34	33	14	14	-23	-40
	Prec.	1.13	0.88	0.48	0.35	1.18	2.83	4.56	1.43	0.65	0.57	0.53	0.18
Ft. McMurray	Max.	17	51	51	66	80	85	85	82	74	80	48	47
	Min.	-45	-39	-33	14	25	23	34	33	14	14	-23	-40
	Prec.	2.71	1.17	0.91	0.53	2.99	2.83	4.56	1.43	0.65	0.57	0.53	0.18
Beaver Lodge	Max.	..	48	48	64	77	75	85	80	73	..	50	51
	Min.	..	-22	-22	18	27	31	34	35	21	..	-17	-30
	Prec.	..	0.97	1.20	0.03	1.65	2.04	1.89	2.51	2.69	..	0.91	0.60
Peace River	Max.	26	49	47	76	85	83	92	82	78	68	56	40
	Min.	-45	-35	-27	14	27	33	37	36	23	26	-18	-28
	Prec.	0.25	0.25	..	1.30	2.27	1.34	4.58	4.28	1.80	0.59	0.00	0.65

Appendices to this report at the end of the book show an analysis of climatic conditions covering a ten-year period, 1911 to 1920, and the bearing these conditions have upon the production of crops in Alberta.

Respectfully submitted,

F. G. FORSTER,
Acting Crop Statistician.



HORSES IN ALBERTA WHICH HAVE SPENT THE WINTER IN THE OPEN

100

100

100

100

100

Report of the Recorder of Brands

H. A. CRAIG, ESQ.,
Deputy Minister of Agriculture,
Edmonton, Alta.

SIR,—I have the honour to submit the following report on the work of this branch of your department for the year 1921.

During the year 896 horse and 1,304 cattle brands were allotted and recorded to their respective owners, while 308 transfers and 22 changes were duly registered. Certified extracts of brands numbered 28, while searches and strays numbered 2,373, being a total of 4,931 transactions.

Compared with last year (1920) these transactions show a decrease of 497 horse brands, 829 cattle brands, 206 transfers, 8 changes and 5 certified extracts, while searches and strays give an increase of 462.

The following table shows the different transactions which have taken place since separate records for the province have been kept:—

Year	Horses	Cattle	Transact'ns	Changes	Extracts Searches and Strays
1906	1361	1894	384	38	73
1907	1030	1230	430	28	73
1908	1103	1225	421	29	292
1909	1308	1326	430	33	783
1910	1891	1672	524	34	1218
1911	1538	1280	362	32	1408
1912	1545	1542	374	16	1655
1913	1471	2059	419	11	1795
1914	1964	2629	395	18	1932
1915	1350	1899	743	27	1372
1916	1503	2833	463	28	801
1917	1839	3370	531	33	673
1918	2161	3455	617	40	985
1919	2079	3165	572	46	2125
1920	1363	2133	514	30	1944
1921	896	1304	308	22	2401
Aver. 16 yrs.	1525	2064	468	29	1221

The number of new brands allotted during the year under review is the lowest since the province of Alberta was formed, and is, no doubt, due to the disastrous winter of 1919-1920, being followed by two poor grazing years, as well as by the general condition of the live stock business. Farming, too, has not been remunerative for a few years, and, consequently, there has been no surplus of cash to invest in live stock.

The number of strays reported (2,373) is again on the increase, and is by far the largest number of animals reported since the operation of the Act.

The number of applications for renewal of brands during the year is 5,179, being 930 for the year 1920, and 4,249 for the year 1921. These, in keeping with the applications for new brands, have also decreased.

The new brand book for the years 1919-20, was issued in the month of October. It contains all new brands issued during these two year, as well as transfers and changes made in any other brand during that period. It also contains all brands renewed within the same time.

The Department of Agriculture has arranged that for the future new brand books will be issued every second year, and as the Brand Act enacts that brands are only valid for a period of four years, unless renewed, it will be observed that it will require two issues of the brand book to complete the full set of any four-year period. The public ought always to bear in mind that these issues of the brand books would perhaps be more correctly described as supplements, as they only contain brands for the two-year period.

The number of documents received during the year was 10,320, while the number of documents despatched was 39,404, making a total of 49,724.

Yours obediently,

JAS. WILSON,
Recorder of Brands.

Report of the College of Agriculture

SIR,—I beg to submit herewith the report of the College of Agriculture for the year 1921.

The enrolment of students in the College of Agriculture for the year 1921 was as follows:

SPRING TERM—	
First Year	19
Second Year	10
Third Year	10
Combined Course—Arts and Agriculture	8
Total	47
FALL TERM—	
First Year	36
Second Year	13
Third Year	8
Combined Course—Arts and Agriculture	13
Total	70

The ten students who graduated in 1921 are occupied at present as follows:

- E. H. Buckingham and H. McArthur are on the Staff of the Schools of Agriculture;
- W. F. Wilson is employed in work for the Provincial Department of Agriculture in Southern Alberta;
- J. G. Clark, J. A. P. Hunter, and J. E. Meagher are on their own farms;
- J. L. Doughty and A. S. Ward are doing research work in the Department of Soils at the College of Agriculture;
- C. B. McAllister is in the employment of the Department of the Interior at Brooks;
- S. Barnes is Assistant Field Husbandryman with the Federal Department of Agriculture.

Of our present senior year, five are specializing in Animal Husbandry with particular attention to Dairying, one in Field Husbandry and two in Soils. Six of the eight third-year students are from the Schools of Agriculture. In our second year, which is the fourth year of the degree course, eleven of the thirteen students came from the Schools of Agriculture, while in the first year of our course at the College, thirty-four out of the thirty-six came from the Schools of Agriculture. The general academic standing of the students seems to be improving from year to year, and special mention might be made of the students in the freshman year and of the very good showing they made at the Christmas examinations.

It may not be out of place to call attention to the fact that while the attendance has fallen off in nearly every agricultural college in Canada,

the attendance here has increased. We have almost as many students in three-year work as our two neighbor colleges put together. This is mentioned only as a tribute to the interest which Alberta people take in education.

As in other years no attempt is made to report upon the work of the departments which are not directly agricultural, the departments which serve the needs of more than one faculty. Our students have definite courses in Chemistry, Physics, Biology, Bacteriology, Geology, Political Economy, English, and Mathematics.

The following is a report by departments of what may be described as the directly agricultural work of the College:

DEPARTMENT OF HORTICULTURE

The work of this department has not changed materially since last year. Outside of the courses given in Horticulture some variety and cultural experiments in vegetables, small fruits, and flowers have been carried on. It would seem that the next expansion in our work might very well be in this department. We have been frequently asked for help during the year by individuals and by Horticultural Societies, and the means of securing some definite information and getting it to the people interested is well worthy of consideration.

DEPARTMENT OF POULTRY

Courses in Poultry were given until the spring, when Professor Bergey resigned owing to Mrs. Bergey's ill health and so far no successor has been appointed. The delay was deemed advisable pending some decision as to the relationship between the College and the Department of Agriculture in connection with this work, which relationship, of course, involves the maintenance of the present poultry plant. Our students have received very practical courses in poultry at the Schools of Agriculture, and it would appear that the work at the College of Agriculture, outside of courses in marketing, and more advanced treatment of poultry, might become quite investigational in its nature. It is understood that a professor of poultry will be appointed as soon as the arrangements mentioned are carried out.

DEPARTMENT OF DAIRYING

The Department of Dairying is well under way. Temporary quarters have been found in the South Laboratory, and some valuable work is being put on by Mr. Marker, who is well known as the Provincial Dairy Commissioner. Five thousand dollars have been spent in equipment so far. Besides the regular courses, Professor Marker carried on a professional short-course during last winter.

Research work dealing with some of the practical problems in the manufacture of dairy products is being carried on in this depart-

ment. Short courses for creamery operators and butter-makers will be commenced during the latter half of February, and it is expected that the attendance will tax the facilities of the department.

There are several reasons why special attention should be paid to dairying in the near future. One good reason is the fact that the dairy products of Alberta already have a splendid reputation over a large area of America and Europe, and this despite the fact that Alberta is as yet but a pioneer province. Another very important reason is that dairying is generally recognized as the centerpiece in a scheme of good mixed farming, and this is the only kind of farming that produces homes and insures a permanent population for the state. A third reason may be offered and that is that during this trying period of reconstruction, dairy products offer one of the surest sources of income to our producers.

DEPARTMENT OF AGRICULTURAL ENGINEERING

This department has put in a very useful year, independent of the courses given in Farm Machinery, Farm Motors, Farm Buildings and Power Equipment, and many other phases of problems directly affected by farm engineering in general. Our Professor of Agricultural Engineering has made a very definite start in co-operation with the Department of Agriculture in furthering the matter of plowing matches. It is expected that this work will be developed quite extensively during the coming year. There is a revival in the work of plowing matches in many parts of Canada. The importance of this enterprise is recognized not only for its practical value from the technical standpoint, but it seems to have also a certain psychological importance because it has always been noticed that good plowmen make the right kind of farmers.

It might be mentioned that the agricultural implement firms have been very generous in supplying us with representative machinery for our Farm Engineering Laboratory. This phase of the work is capable of considerable extension, and a splendid exhibit may thus be secured at comparatively small cost.

DEPARTMENT OF SOILS

The Department of Soils has become one of the major departments in the work of the College. Besides the courses given in soils, work of an investigational nature is well under way in our laboratories equipped for that purpose. The work of a provincial soil survey has been entered upon, Dr. Wyatt, in co-operation with the Federal Department of the Interior, making soil survey during the fall of that area of Southern Alberta most affected by soil drifting. The soil samples taken during that trip are now being subjected to physical analysis, and as soon as the soil chemical laboratory is equipped further analyses will be made. It is gratifying to note that this very important work is at last under way. A great service will be performed for the people of Alberta through the development of this work. Soil survey work should be conducted in both unsettled and settled districts. There are unquestionably some districts which, in the future, may be thrown open to settlement, and which are not adapted to certain kinds of farming.

This should be known and thus save the unnecessary dissipation of the settlers' energies. The extensive soil type areas should be surveyed and representative samples taken and subjected to analysis and then, ultimately, plot investigations conducted in order to determine the exact field conditions.

After the survey work and mapping is completed, it will be no trouble for the farmer to receive reports on his type of soil regarding its management and treatment. Survey work, however, is not final, but serves only to locate and classify the various soil types. It should be accompanied by field experiments.

All agricultural questions ultimately resolve themselves into the one consideration of fertility maintenance, for the livestock farmer is dependent upon feed for his success and food must be produced by soil and nature at the expense of the productive power of the soil, which, in turn, means soil impoverishment, unless efforts are made to supplement the demands of crops. Because our soils at the present time are relatively new and fertile, does not lessen our obligations to future generations, and it becomes our urgent duty to determine the why and how of the production question for our farmers and our province.

In order to supply the farmer with the required information, it will be necessary to obtain such knowledge by means of field experiments which should endure for a considerable number of years, and should have each crop represented each year in order that differences may not be caused by climatic environments.

For the past few years the drouth has prevented production of crops in certain sections of the province. The question naturally arises, should some of these soils ever have broken from the native grazing condition? Experimental work should be done to determine the best place for such soils in our system of agriculture.

For some of our soils it is essential that we utilize the waters of our rivers for purposes of irrigation. Practically all soils of arid sections are heavily impregnated with alkali salts, and as soon as water is diverted for irrigation purposes, we must expect a greater or less movement of these salts, unless the greatest degree of precaution is taken regarding the judicious handling of irrigation waters. The practice of irrigation will naturally be accompanied by the appearance of alkali regions. These questions should be attacked in order that the disagreeable features may be minimized.

It is quite generally understood that the presence of 0.1 per cent. of sodium carbonate, 0.25 per cent. of sodium sulphate is the maximum amount of the respective salts which permit of the normal production of the average crops. It is also quite true that certain mixtures of salts tend to reduce the harmful effect upon crops.

A small amount of analytical work has already been done which shows the presence of three or four per cent. of total water soluble salts in some Alberta soils. They are chiefly composed of the sulphate

of calcium, however, and are less detrimental than some of the more injurious compounds, yet considerable investigational work should be done in connection with this phase of agriculture. Drainage problems will go hand in hand with the irrigation practices.

DEPARTMENT OF FIELD HUSBANDRY

Our Department of Field Husbandry is becoming very well known throughout Alberta. It was the first department in operation in the College, and has developed rapidly from year to year. Several courses in crop production, seeds, potatoes, cereal crops, crop management, plant breeding, seed and crop judging and experimental methods, are given to the students, but outside of this academic work the Department of Field Husbandry has a vast amount of valuable research work under way. It would be out of place in this report to take up the time in discussing all of these projects, but a few of the most important, the most comprehensive, the most pressing, may be briefly referred to.

1. Testing varieties of wheat, oats, barley, and peas to determine whether our present varieties are suitable for our peculiar conditions in the Park Belt sections of Alberta. Most of our varieties are too late and are thus not sure.

2. Breeding and selecting promising varieties of wheat for greater earliness consistent with high milling qualities. One highly valuable wheat has been isolated and will soon be ready for use.

3. Testing of alfalfas, red clover, sweet clover and alsike clover for winter hardiness. From these tests a very important red clover, introduced from Sweden, has been discovered. In tests with other clovers here at the University, and when tested out with farmers, it has shown that it possesses superior winter hardiness, and will readily withstand the low temperatures in Alberta. It has survived six winters perfectly. It will also do well under quite droughty conditions. This clover has been named *Altaswede*, and is being rapidly distributed for multiplication in the Park Belt and irrigation sections of the province. At present, there are about two thousand pounds of seed available.

4. Testing sweet clover in the open plains sections of the province to determine its drought hardiness. Reports from these tests indicate that sweet clover is quite satisfactory when properly seeded in the dry sections of the province. Co-operative tests with farmers indicate that Alberta will be well served with legumes in all parts by using sweet clover in the open plains, *Altaswede* and alfalfa in the Park Belt, and alfalfa and *Altaswede* under irrigation.

5. Testing varieties of corn and sunflowers for fodder.

6. Determining the relative suitability of corn and sunflowers for the Park Belt. These tests conclusively show that sunflowers grow at lower temperatures than corn, withstanding from five to eight degrees of frost without injury at all stages, while corn at such temperatures freezes.

7. Selecting a suitable grain corn for the dry sections of the province, which can be used as a partial substitute for the bare fallow, and which can be pastured or fed as ripe grain. A new corn has been discovered by this station, and under test in all parts of the province, has shown itself to be sufficiently early as far north as Fort Vermilion, to ripen seed, suitable for all conditions as a table corn, and sufficiently early in the south to produce ripe grain on a large scale. During the last two seasons of 1920 and 1921 respectively, over fifty bushels of ripe cob corn per acre have been grown.

8. Growing alfalfa for hay and seed. These tests have amply proven that alfalfa when properly seeded will produce satisfactory yields of hay and seed.

9. Growing sweet clover for hay and seed. These tests have also amply shown that sweet clover can be grown satisfactorily for hay and seed.

10. Seeding red clover, sweet clover and timothy with a nurse crop of wheat, oats or barley. This is one of our largest and most important projects.

11. To determine the most suitable crops for spring, summer and autumn pasture for dairy cattle, calves, hogs, etc. These tests indicate that winter rye, either alone or with oats seeded at the same time, will serve splendidly, as a summer, fall and spring pasture. Others such as oats or spring rye, rape, etc., can be used to supplement. The experiment involves fifty different tests, and will not be completed for another year.

12. A study of the native grasses of Alberta with a view to utilizing the best of these in our agriculture. Observations have revealed that the western wheat grass, a wild grass in the south, seeds readily and re-establishes itself very rapidly. We are studying this grass with a view to ascertaining its seed-producing qualities for commercial purposes in order to use it as a dry land grass when necessary in the southern belt to reseed and reclaim land.

The wild Red Top and Kentucky Blue grasses of the north are also under study for pasture grasses in the central and north (Park Belt) sections, and the irrigation section in the south.

Some sixty-five different species of wild grasses have been studied.

13. *Hay and Pasture Production.*—The common grasses such as timothy, western rye grass, brome grass, orchard grass, meadow fescue are being studied under the following heads:

- (a) When to seed?
- (b) Is a nurse crop feasible?
- (c) Which of these grasses or combinations of same is most suitable for hay and pasture?
- (d) What are the causes of "choking" in timothy after it has been down for a year or more?

14. Determining the effect of arrested maturity of oats upon their suitability for seed purposes. The purpose here is to determine if seed cut prematurely some six to ten days before normal maturity, is suitable for seed. This practice would enable one to cut seed early and escape frost with satisfactory results from the seed standpoint. It would enable one to use late but productive varieties of oats with success. Since our investigations have shown that early maturing varieties of oats do not yield within fifteen to twenty bushels as much as the medium or late maturing varieties, this experiment when completed will show whether later and more productive varieties cannot be grown so long as the seed used is cut early enough to miss the frost.

15. Determining the actual physical and chemical effects of frost upon all kinds of seeds including wheat, oats, barley, flax and peas. This investigation was prompted because of the difficulty of actually identifying frost on commercial grain. In fact, only the germination test is the infallible guide, and yet all oats are graded by cutting the oat seed and judging by appearances. These tests are revealing that such methods of identifying frost at least upon oats are not reliable.

16. Practice shows that alfalfa seed cannot be grown with certainty under irrigation conditions in Southern Alberta. This is not well understood. It is thought to be partly due to the time and amount of water applied and partly due to uncertain fertilization of the flower; and perhaps due to soil moisture and climatic conditions at time of fertilization, which is followed by a poor set of seed. We are studying this problem very carefully, as the success of the alfalfa seed industry depends upon its solution. If it can be solved a large production of seed similar to that which won first and grand champion at Chicago can be produced.

17. Practice shows that the timothy seed hulls very badly, with the result that its commercial value is materially reduced. We are studying—

- (a) The value of hulled seed for seeding.
- (b) Whether hulled seed loses its vitality with age more quickly than unhulled seed.
- (c) Why timothy hulls:
 - (1) Does early or late cutting make any difference?
 - (2) Does careless handling make any difference?
 - (3) Does close threshing make any difference?
 - (4) What effect do climatic conditions have upon it?
- (d) Can it be overcome by breeding a timothy whose hulls adhere closely and which resists hulling?

18. *Determining the Factors of Winter Hardness in Winter Wheat.* This is being done scientifically. If this can be discovered, we can then intelligently select and breed a winter wheat for the Park Belt of Alberta. Such a wheat would suit our conditions better than a spring wheat, as it would be more productive than present early varieties, and it would escape injury from fall frosts, when the berry of the spring wheat invariably suffers from the August frosts.

19. *Growing Sunflowers Successfully.*—Present available varieties are too late, and when ensiled over seventy per cent. of their weight is water, and either runs out through the bottom of the silo or settles to the bottom and produces a badly colored sour silage.

To alleviate this condition, investigations are being carried out along the following lines:—

- (a) Early seedings.
- (b) Thick seeding to induce greater earliness.
- (c) Deferring ensiling at varying periods to allow the moisture to pass off. Over forty per cent. has been found to pass off in three days.
- (d) Selecting and breeding for earlier varieties and varieties of high dry matter content. Some very far reaching results are already available.

20. Much doubt exists as to the value of sunflowers to Alberta agriculture:—

- (a) As to their suitability for ensilage.
- (b) As to where they can fit into a system of cropping.
- (c) As to their suitability to Alberta's climate, where frost and drought are the limiting factors.

Exhaustive investigations along these lines are under way, and point to the facts that earlier varieties than at present exist are suitable and highly essential for the northern or Park Belt areas of Alberta, where low temperatures obtain and fodder corn is not successful, and where rainfall is more liberal than in the dry sections. On account of the lack of moisture in the south and south-east, the sunflower is a more questionable proposition, on account of its high moisture requirement. Our tests include growing sunflowers after every other crop, and the yields are in keeping with available soil moisture. The yields ranged from less than fifteen tons on wheat land to over twenty-seven and thirty tons on potato and corn land respectively.

21. *Growing Potatoes:*—

Our tests include:

- (a) Testing for suitable varieties for commercial selling. These must have high table qualities, disease resistance and high yield. The work at the station has been extended to the Edmonton and surrounding districts. The results so far are very significant. This work was undertaken at the special request of the Edmonton District Potato Growers' Association.
- (b) Study of diseases, principally the common scab. These are being studied in the co-operative tests and in field and greenhouse at the University. Diseases have reached an alarming stage in Alberta, and only a better understanding of their nature will lead farmers to take proper precautionary measures. In 1918, a careful

survey of potato fields showed a loss in yield of at least forty per cent. in one field to diseases alone. Four circulars have already been published on Potato Production.

22. *Seed Production in Alberta.*

Through the Alberta Crop Improvement Association and the Plant breeding activities of the Department of Field Husbandry, every help and encouragement is being given to the production of registered seed in alfalfa, Altaswede red clover, Marquis and Ruby wheat, Banner and Victory oats, peas and corn. All of these seeds are first produced in a pure condition at the College and distributed at a nominal cost to the grower, and grown under the supervision of the Department of Field Husbandry. It does not seem too much to expect, as a result, a large and thriving industry in the production of red clover, alfalfa, and other seeds in different parts of this province. Already twenty to forty thousand bushels of registerable seeds of cereals have been grown from two years' effort and are ready this year for further distribution.

It is possible that before long we shall be obliged to consider whether this work might not become self-sustaining under a definite organization of the members of the Crop Improvement Association. The distribution of seed is so much of an executive rather than of a technical nature and this work has developed so rapidly that it is possibly outside the scope of our work to carry the proposition further.

DEPARTMENT OF ANIMAL HUSBANDRY

This is the second oldest of the departments and during the time it has been in operation this department has made splendid progress. The regular Animal Husbandry lectures are given to students, but in addition to this a large amount of investigational work is being carried on. One federal official has stated that our station is doing as much experimental work in live stock as all the other college stations in Canada put together. We have at present a very creditable selection of horses, cattle, sheep and swine. We have this year erected a horse barn, sheep barn, and a swine barn, each of its kind one of the best in Canada. We are hampered somewhat for lack of a satisfactory judging pavilion, not alone for class work, but because without this it is practically impossible to put on winter short courses.

The college farm, which lies three-quarters of a mile south of the barns and which comprises three hundred and seventy-nine acres is under the direction of the Animal Husbandry Department. This year we received a grant of five thousand dollars for the purpose of putting this land in shape for cultivation. Roughly speaking, we made about one hundred and fifty acres ready for cultivation. A good part of this had to be cleared of heavy growth. From thirty to forty acres remain to be cleared and broken. We have found as yet no adequate water supply.

The following is a statement of live stock experimental work, and because of the interlocking nature of the work it was thought well to go outside the bounds of 1921 in reporting, so a statement is made of experiments proposed, experiments under way, and also a statement of the amount of work covered in certain experiments repeated more than once.

Swine:

1. To determine the possibility of raising fall pigs.

Packers must have a steady supply of hogs if we are to secure a stable all-year market. At present the bulk of the hogs raised are marketed during a few months in the fall and early winter, with the result that there is an over-supply at that time and a scarcity for the remainder of the year. The result is cheap hogs during the usual marketing season, and a high price at a time when few hogs are available.

(a) *Work Done*.—Four lots of fall pigs were fed by this department during the fall and winter of 1920-1921. One lot fed cooked feed outside; one lot fed cooked feed under shelter; the third lot self-fed outside and the fourth lot self-fed inside. Results:

- (1) For that year, fall pigs were profitable.
- (2) Greatest profit resulted from feeding grain dry in self-feeders.

(b) *Work Under Way*.—Four lots of fall pigs are again being fed as outlined for 1920-1921.

(c) *Future Program*.—It will require from five to eight years' work along this line to arrive at definite conclusions. Unusually mild weather prevailed throughout the test of 1920-1921. The same has been true so far this season. Final conclusions must be based on average results of both mild and severe winters.

2. *Early vs. Late Spring Pigs*.

(a) Advantages of early spring pigs:

- (1) Reach the market before the usual fall break in prices.
- (2) Sows may be re-bred for fall pigs.

(b) Disadvantages of early spring pigs:

- (1) Unfavorable weather.
- (2) Require more expensive grain and less cheap pasture.
- (3) Losses due to hairless pigs.

(c) Importance of this question:

- (1) It has a direct bearing on the question of producing pigs at different seasons of the year to insure a stable market.

(d) Necessary program:

Several tests will be necessary to secure average results. This problem has been under consideration for the past four years. We are now prepared to offer certain suggestions, but feel that it will be at least five years before the question is definitely settled.

3. *Pastures for Growing and Fattening Pigs.*

We believe that good pasture will do much to reduce the cost of producing pork. This statement is based on three years' work at this station.

(a) *Work Done:*

- (1) Three years in comparing pasture vs. dry lot feeding.
- (2) Three years' work in comparing heavy vs. light grain feeding on pasture.
- (3) Carrying capacity of rape, grain mixture, and alfalfa pastures.

(b) Future program:

We desire to secure additional information on the following:

- (1) Carrying capacity of different pastures.
- (2) Pasture vs. dry lot.
- (3) Succession of pastures for the summer months.

4. *Rations for Pregnant Brood Sows:*

(a) Importance:

- (1) Determine most suitable rations as indicated by weight of sow and strength of pigs.
- (2) Determine the most economical rations.

(b) Work done:

We now have results for the past four years on various rations for brood sows.

(c) Future Program:

In the past we have given attention largely to a comparison of single feeds rather than mixtures. With this foundation we are prepared to go on record as to the relative value of all the common local grains, and in the future will give more consideration to grain mixtures.

5. *Oats vs. Barley vs. Wheat for fattening Pigs:*

In our 1920-1921 tests we found that it required twice as much grain and a much longer feeding period to finish pigs on oats

than was the case with barley. We find many swine producers attempting to fatten their pigs largely on oats. Information on this subject will again assist in reducing the cost of production. This test is being repeated at the present time. It is felt that additional tests will be required before definite statements can be made.

Beef Cattle:

Experiments at this and other stations indicate that beef cattle can be profitably finished for market on feeds common to this country. We believe that the business of fattening cattle will become one of the most important sources of revenue for the many cattle producers of the province. From the inquiries received it is quite clear that more people each year are turning their attention to this method of marketing their surplus grain and hay. We have been repeatedly asked for information as to:—

- (a) Grain mixture to use.
- (b) Amount of grain to feed.
- (c) Method of starting cattle on feed.
- (d) Value of silage in fattening cattle.
- (e) Kind and amount of roughage to feed.
- (f) Type of steer to feed.
- (g) Margin required.
- (h) Time to buy and sell.

1. *Work done:*

Winter 1920-1921.

- (a) Comparison of oat, oat and pea, and sunflower silage.
- (b) Heavy vs. medium vs. light grain feeding.
- (c) Good vs. medium vs. common feeding types.
- (d) Lowland prairie hay vs. silage and hay.

2. *Work Under Way:*

Winter 1921-1922.

- (a) Comparison of oat hay and prairie hay.
- (b) Comparison of oat silage, oat and pea silage, and sunflower silage.
- (c) Silage vs. oat hay.
- (d) Silage vs. prairie hay.
- (e) Comparison of food vs. common steers.

3. *Future Program:*

Additional information should be secured as follows:

- (a) Prairie hay vs. oat hay.
- (b) Prairie hay vs. silage.
- (c) Oat hay vs. silage.
- (d) Best combination of roughages for those with and without silos.
- (e) Most economical grain mixture.
- (f) Length of time to feed.
- (g) Margin required.
- (h) Value of straw for fattening steers.
- (i) Calves vs. yearlings vs. two-year olds vs. three-year-olds.

Dairy Cattle:

The most important problems from the standpoint of the dairyman are:—

1. Most suitable crops to provide pasture throughout the growing season.
2. Roughages for milk production.
 - (a) Value of different hays.
 - (b) Value of silage.
 - (c) Value of roots.
 - (d) Most satisfactory combination of roughages.
3. Most economical concentrates for the dairy cow in milk.

We are anxious to begin work on the above problems. But little can be done, however, until a suitable dairy barn is erected on the new farm.

Sheep:

From results secured at this station, we are of the opinion that we can compete successfully with any recognized sheep-producing country in the production of mutton and wool. This is based on exact records on the cost of wintering pregnant ewes, the growth of fleece, and growing and fattening lambs for market. Instead of importing mutton and wool for home consumption, Canada should be classed as an important exporting country.

1. *Work Done:*

- (a) Two years' work in comparing roughages for pregnant ewes, with exact records on the gain or loss in weight of ewe, size and strength of lambs and growth of fleece.

- (b) Two seasons' work in comparing pastures for ewes and lambs.
- (c) Three lamb feeding tests comparing oat hay, prairie hay, timothy hay and alfalfa hay.
- (d) Two years' records on effects of breeding ewe lambs.

2. *Future Program:*

- (a) Grain mixtures for fattening lambs.
- (b) Roughages for fattening lambs.
- (c) Silage for fattening lambs.
- (d) Roughages for pregnant ewes.
- (e) Silage for pregnant ewes.
- (f) Pasture for sheep.

PUBLICATIONS

The following is a statement of: (1) Reports mimeographed or printed, and (2) reports, the experimental work for which has been performed and which are ready to be published in the near future.

- (1) Circular No. 6—Potato Culture.
Circular No. 7—Potato Diseases.
Circular No. 8—Potato Varieties.
Circular No. 9—Alberta Crop Improvement Association.
Circular No. 10—Potato Seed Treatment.
Fattening Two-year-old Steers.
Type in Feeder Steers.
Silage for Fattening Steers.
Effect of Breeding Ewe Lambs.
Soil Sampling.
- (2) Altaswede Clover.
Potato Diseases (Revised).
Certified Potato Seed.
Registered Potato Seed.
Alfalfa.
Bulletin on Steer Feeding.
Bulletin on Roughages for Pregnant Ewes.
Bulletin on Roughages for Fattening Lambs.
Circular on Rearing Fall Pigs.
Circular on Fattening Pigs.
Bulletin on Rations for Brood Sows.
Bulletin on Feeding Pigs on Pasture.
Legume Inoculation.
Plows and Plowing.
Plowing Matches.
Knots and Hitches for the Farm..

All of which is respectfully submitted,

E. A. HOWES,

Dean.



ROOT HARVESTING ON ONE OF THE DEMONSTRATION FARMS



SUNFLOWER ENSILAGE IN ALBERTA



THE GROWING OF CABBAGE

Report of the Olds School of Agriculture

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I beg to submit the annual report of the Olds School of Agriculture for the year 1921.

The following are the present instructors in the Olds School of Agriculture:

F. S. Gridale, B.S.A., Principal and Instructor in Agronomy and Horticulture
 C. A. Weir, B.S.A., Farm Manager and Instructor in Animal Husbandry and Farm Management.
 G. R. Holeton, B.Sc., Mechanics.
 R. N. Bissonnette, B.A., B.S.A., B.Sc., Science.
 M. W. Malyon, B.S.A., English, Mathematics and Poultry.
 W. G. Moore, V.S., Veterinary Science.
 J. N. Martin, B.S.A., Biology.
 C. McIntyre, Cooking.
 A. I. Lammiman, Sewing.

The following special lecturers gave instruction at the school during the term:

Wm. Elliott, Blacksmithing.
 Dr. Talbot, Veterinary Science.
 Florence West, Home Nursing.

ENROLMENT

Each year's attendance at the Olds School of Agriculture since 1913-14 is as follows:

Year.	First Year		Second Year		Total
	Men	Women	Men	Women	
1913-14	65	39	..	..	104
1914-15	69	19	23	8	119
1915-16	83	50	21	7	161
1916-17	56	53	19	7	135
1917-18	81	29	18	17	145
1918-19 (Influenza)	..	..	..	..	..
1919-20	85	38	28	8	159
1920-21	69	35	42	17	163
1921-22	49	18	31	16	114
	838		262		1100

The total number of students enrolled in the first and second years since 1913..	1100
The total number of students who have entered the first years since 1913.....	838
The total number of students who have entered the first years in agriculture since 1913	557
The total number of students who have entered the first years in Domestic Science	281
The total number of students who have taken the second year's work in Agriculture	182
The total number of students who have taken the second year's work in Domestic Science	80
The average attendance in the first year Agriculture for eight years	69.62

The average attendance in the first year Domestic Science for eight years	35.12
The average attendance in the second year Agriculture for seven years	26.0
The average attendance in the second year Domestic Science for seven years	11.43
The average per cent. of Agriculture students who have returned each year during the past seven years to take the second year's work	35.82
The average per cent. of Domestic Science students who have returned each year during the past seven years to take the second year's work	30.53
The per cent. returned from 1920-21 first year in Agriculture	45.0
The per cent. returned this year from 1920-21 first year in Domestic Science	45.71
The number of graduates in Agriculture who have entered the University	57.0
The number of graduates in Domestic Science who have entered the University	4.0
Average age first-year women	19.5
Average age first-year men	19.3
Average age second-year women	21.0
Average age second-year men	20.4

TWO YEARS' INSTRUCTION

The course in the School of Agriculture consists of two terms of five months each. The terms begin the first of November and end the last of March. Those students who are successful in passing the examinations at the end of the first year are allowed to enter the second year's courses. At the end of the second year a final examination is given. A diploma is granted to those who pass this final examination. In addition to this, all those who in the opinion of the examining board are eligible are given entrance standing to the University of Alberta. The course in agriculture at the University covers three years, and if successfully concluded commands the degree of Bachelor of Science in Agriculture. There is a similar arrangement for the Domestic Science students.

COURSES IN AGRICULTURE

The instruction in the Olds School of Agriculture is made to bear on the practical side of farming. The school has an excellent equipment in all departments. It is a matter of considerable satisfaction to the instructors in the various departments to realize that each year the courses in the school are becoming more valuable to the students; more valuable because the experience of the work in previous years is used in working out the course of study for the year in question. The useful material is retained, and the less valuable parts are discarded to give place to material which is considered to be more serviceable. The course of study is as follows:

Soils and soil cultivation, judging, feeding and care of livestock, the identification and eradication of weeds, judging and grading seed grain, selection of seed grain, rotation of crops, veterinary science, carpentry, blacksmithing, farm machinery, cement work, gasoline engines, road building, growth of small trees, vegetables, trees and shrubs, killing, cutting up and curing meats, farm management and elementary courses in mathematics, bookkeeping, chemistry, physics, English, public speaking, and poultry. In dairying, instruction is given in cheesemaking, milk production, milk testing, butter-making, care of the separator, etc.

DOMESTIC SCIENCE

The home-makers' course is primarily one of a very practical nature. It is intended to make the girls who take it efficient home-makers. It includes enough theory to make the practical side truly valuable. In this course, sewing, cooking, home nursing, laundering, household administration, physiology, hygiene, sanitation, foods, household book-keeping, dairying, poultry, horticulture, physical culture and courses in elementary English, mathematics, chemistry and physics are taught.

STUDENT ORGANIZATION

In the various organizations of the school, the students are able to round out their general course with the development of the athletic, social and literary side of college life. In this they are assisted by the members of the staff best suited in the various lines. Special care is taken to see that all students are given a chance to act on the society executives as training in leadership.

The Literary Society holds weekly meetings and special attention is paid to platform work and public addresses. Debates and public speaking form the central items of the program. These are balanced with music and recitation numbers. The school paper, "The Chinook," is edited by the various classes in turn, and is both instructive and amusing.

The Athletic Association is in charge of the sports of the college. Baseball and basketball are played in the open as long as the weather is favorable. The open rink provides amusement for the winter months in skating and hockey for both men and women.

The Social Committee has charge of the weekly entertainments. Dancing and games are the usual program, but there are special evenings of stunts and lighter numbers. Economy has been the watchword of the committee throughout the past term. The outlay in connection with the social evenings has been minimized. The music has been provided by the school orchestra, and the Domestic Science girls prepare the refreshments at very little expense to the student body.

VACCINE

Since issuing the 1919 report, the school has sold 1,150 doses of germ-free blackleg vaccine. This vaccine sells at fifteen cents per dose.

O. S. A. MAGAZINE

The School of Agriculture is publishing a school magazine again this year. This is the seventh year the O. S. A. has published a magazine. The magazine will carry some advertising to assist in raising money to defray the expenses incurred in connection with its publication.

The magazine is one of the very important phases of the student life at the O. S. A. It is also a means that can be used to keep the school in touch with most of the ex-students. The copies are being sold this year.

METEOROLOGICAL RECORDS

These records have been taken daily at the Olds School of Agriculture for the past eight years. In this work the maximum and minimum temperature, precipitation, evaporation and sunshine are recorded. This information is sent monthly to the Dominion Meteorological Branch, Toronto, Ontario. The following tables give some information on the precipitation, evaporation and temperatures recorded during the past few years.

PRECIPITATION RECORDS

	1914	1915	1916	1917	1918	1919	1920	1921	Average Monthly
January	0.49	0.75*	0.60	1.16	0.75*	2.05	0.60	0.60	0.91
February	0.66	0.30*	0.20	0.25	0.42	0.95	0.30	0.30	0.44
March	0.85*	0.60	1.00	0.15	0.05	1.95	1.46	0.86	0.86
April	0.29	1.00	0.60	0.75*	0.18	1.02	1.63	2.10	0.94
May	0.92	4.27	5.49	4.86	2.40	1.71	1.40	0.78	2.71
June	3.49	8.09	4.53	1.88	0.76	0.96	0.48	1.57	2.72
July	1.29	7.04	4.61	0.86	0.95	1.36	3.25	4.39	2.97
August	0.58	2.50*	8.56	2.44	2.46	4.43	0.62	1.82	2.70
September	1.49	1.25*	1.50*	2.14	0.69	1.43	0.72	0.67	1.23
October	1.50	0.73	0.93	0.31	0.50	1.05	1.53	0.02	0.82
November	1.70	0.52	0.80	0.65*	0.05	1.37	0.20	1.17	0.81
December	1.90	0.02	0.90	0.50*	0.50	0.59	0.30	0.05	0.60

Totals . . . 13.16 27.42 29.57 16.19 9.60 15.14 15.07 14.93 17.71

* Estimated.

EVAPORATION FROM FREE WATER SERVICE AT OLDS

Month.	1919 inches	1920 inches	1921 inches
May	3.69	2.72	3.99
June	4.08	4.03	4.62
July	4.93	4.92	4.22
August	3.98	4.71	3.79
September	2.12	3.30	3.22
	18.80	19.68	19.84

DATES OF FIRST SEEDING AT OLDS, 1914-1920.

Years.	Dates
1914	April 17th.
1915	April 3rd.
1916	
1917	May 5th approximately.
1918	April 12th.
1919	April 8th.
1920	May 15th
1921	April 27th

FAIR WINNINGS FOR 1921

Four head from the Shorthorn herd at the Olds Demonstration Farm were exhibited at Calgary and Edmonton summer fairs this year. These young things, being all pure white, made a very attractive showing. Two were senior calves, one a junior yearling heifer, and the fourth a senior bull calf. The herd got somewhat higher up in the money at Calgary than it succeeded in doing at Edmonton.

Here the senior calf, May Cumberland, headed a strong class of heifers, while the other calf, Lady Mayflower 2nd, a heifer that was quite young and consequently lacked size, stood fifth. The junior yearling heifer, Broadhooks Rose, held fourth place in the open class for that age. The bull calf, Dale Victor, took fourth position in his class. Shown as a junior herd, the four whites looked well together, but only succeeded in taking the third prize ribbon.

At Edmonton, May Cumberland was forced to take second place, the good heifer which stood next her when John Dryden placed them in Calgary being put above her by James Watt at Edmonton. The junior yearling heifer was stepped down one and took fifth position. In a class for Alberta-bred heifers, from which winners were excluded, Broadhooks Rose and Lady Mayflower 2nd stood second and third respectively. The bull calf had gone badly off his feed at Edmonton, and failed to get a place, except when shown with the junior herd, when the aggregation held fourth place.

POULTRY

The poultry population of the province has grown approximately two million in the last ten years. The farmers are coming more and more to depend on this important side-line. The need, however, is not for more poultry, but for better poultry. This applies particularly to laying hens. Present-day indications are that a layer can be selected by observation and handling. This is where the value of the construction and demonstration becomes of value.

The poultry department also is becoming recognized as a source of information for the farmers. This is indicated by the frequent inquiries from farmers and others regarding housing, diseases and equipment.

In addition to being a source of information and instruction, the school could be a valuable centre for the distribution of male birds and hatching eggs. If a strain of heavy layers was maintained by the school the influence would be wide spread, the school drawing students as it does from widely-separated points. The distribution might take place through the students or through the school fair associations.

CRATE FEEDING EXPERIMENT, O. S. A.

Fall Term, 1921

The object of the experiment this year was to determine the relative value of different grain mixtures for the purpose of crate fattening cockerels. It was thought advisable to use only the grains which might be found on any farm. Accordingly, the following were used:

Wheat.

Oats.

Barley.

Buttermilk.

They were used combined in the following ways. Equal parts by weight:

1. Wheat and oats.
2. Oats and barley.
3. Barley and wheat.

In each case the grain was ground as finely as possible.

Buttermilk was used to mix the grain to a pancake batter, and no other liquid was given except during fasting period at the end when the birds were allowed all the water they would drink.

The birds used were all cockerels, and were of a very mixed variety and medium-sized birds predominated. The feeding period lasted from November 28th to December 15th.

The birds were divided into six groups according to the feed and rate of feeding. Each group consisted of twelve birds in three crate divisions. Each division held four birds.

Table No. 1
RESULTS OF EXPERIMENT TO TEST FEEDING VALUE OF VARIOUS FARM GRAINS GROWN IN ALBERTA

Kind of Grain	Group	Number of of birds	Original weight of birds	Average weight of birds	Cost of feed	Gross weight gain	Average gain	Cost per lb. of gain
Oats and Wheat	I.	12	43 lbs.	3.58 lbs.	87.3 cts.	11.89	0.99	7.31
	IV.	12	* 29.62	3.70	39.3	9.4	1.17	6.26
Oats and Barley	II.	12	48.5	4.04	71.19	15.13	1.26	4.6
	V.	12	† 3.3	3.48	66.5	11.13	1.01	5.9
Barley and Wheat	III.	12	46.3	3.86	82.13	13.0	1.08	6.28.
	VI.	12	47.84	3.82	84.10	12.2	1.01	6.8

* Information available only on 8 birds.

† One bird died early in the experiment.

Groups 1, 2, and 3 were fed gradually increasing feeds starting with 5 ounces per four birds per feed, until on the 18th day they were taking 12 ounces. Groups 4, 5, and 6 were started with 5 ounces, but the increase was greater. On the 10th day, they were taking 10.75 ounces, and from the 10th until the 18th day they were allowed all they could clean up in 20 minutes.

The experiment, therefore, divides itself into two distinct parts:

1. Value of rate of feeding.
2. Value of different feeds.

The foregoing table gives the results of the experiment.

The greatest average gain, it will be observed, was attained from the feeding of oats and barley, the feeds being gradually increased. Even when given all they would take, as in groups 4, 5, and 6, oats and barley gave the best results. Wheat and barley stood next, but had only a slight advantage over oats and wheat. However, these are only indications, as the number of birds used was comparatively small.

The following table gives the results of the feed from an economic point of view:

Table 2.

Average weight of feeders	Average cost per pound	Average finished weight	Average selling price per pound	Gross profit per bird
3.75 lbs.	13.7c	4.78	21c	49.01

From table 1, it will be seen that the average cost of feed per bird was 6.4 cents. The net average gain was, therefore, 42.6 cents. This, however, does not include labor, cost of heating pen, rent of building and other minor charges. From a farmer's standpoint, these expenses would be low and a reasonable net gain would still be possible.

There are some points which the tables do not bring out. For example, weekly weighings showed that the greatest gain was during the first two periods. It also does not indicate the value of the different types of birds. The birds of the light breeds invariably made unsatisfactory gains, as did crippled birds. A few birds had crooked breast bones. These individuals did not do well.

The question is often asked: "Does it pay to bleed birds for market?" This is asked in view of the fact that there is a resultant loss in weight. The average loss in weight of blood and feathers of 10 birds was 7.5 ounces. The average weight of feathers was 3.5 ounces. This leaves the average weight of blood as 4 ounces.

Stuck birds grade No. 1, while birds with dislocated necks grade No. 2. The difference in price this year was 4c. This leaves a decided balance in favour of the bled birds.

The experiment indicates that it is profitable business to finish birds before putting them on the market. A pound of grain is worth, roughly, three to four times what it would cost to produce it.

NOTE:—In working out the tables the following values were put on the various materials:—

Oats, 30c. per bushel.
Wheat, 75c. per bushel.
Barley, 35c. per bushel.
Buttermilk, 30c. per cwt.

SUMMARY OF CRATE FATTENING EXPERIMENTS FOR TWO PREVIOUS YEARS

The following tables give the results of experiments on crate feeding of cockerels carried on in two previous years:

TABLE 1.—RETURNS FROM CRATE-FED BIRDS

Average weight of birds before feeding	Average cost	Average finished weight	Average selling price	Average gross gain	Average cost of feed	Average Gain
4.5 lbs.	51.5c	5.12 lbs.	94.5c	42.9c	9.2c	33.9c

In these experiments, ground oats alone, or ground oats and middlings mixed with buttermilk, gave the best results.

Other features of the work of these years are similar to this year's work.

TABLE 2.—RATE OF FLESHINGS

Average weight at beginning	Average weight at 7 days	Average weight at 14 days	Average weight at 18½ days	Average weight after fasting	Average weight after bleeding
4.6 lbs.	5.1	5.76	6.07	5.8	5.25

This "rate of fleshing" work was a special feature of the early work. It indicates at what period the flesh is put on during fattening. The table shows that the greater part was put on during the first fourteen days. However, continued feeding serves to firm the flesh up to a certain period. The experiments would indicate that about twenty-four days should be the longest feeding period.

EXTENSION WORK

Apart from its actual class room work, the success of a school of agriculture depends in large measure on its ability to render assistance to the farmers in its tributary territory. The effectiveness of this

assistance depends on the extension organization. The effectiveness of the organization depends on the school functioning as a centre of control of extension workers in its district. All the instructors in the school are available for extension work along their own lines. It is impossible for any field man to possess accurate information on all problems that will confront him, but by working from a centre such as a school of agriculture he can readily obtain assistance from a number of fairly well-versed specialists.

Some of the lines of activity for the agricultural school extension worker are:—

1. Active work in all organizations for the assistance of co-operative enterprises.
2. Work in the organization and management of school fairs, calf and pig clubs and kindred organizations in his district.
3. Assistance in the exchange of commodities such as seed grain, breeding stock and feed, both inside and outside his district.
 - 3a. Providing good seed to settlers in the province.
 - 3b. Answering a great many letters on farm problems.
4. Field demonstrations in such lines as:—
 - (a) Control of weeds and insect pests.
 - (b) Tree-planting and wind breaks.
 - (c) Prevention of soil drifting.
5. The organization of short courses in his district.
6. The organization of fairs, plowing matches, etc.
7. Demonstrations in levelling ground for irrigation.
8. Demonstrations in running irrigation ditches and in irrigating.
9. The dissemination of useful timely literature on farm problems.
10. General personal help and advice to farmers in their individual problems.

The Domestic Science extension work for the schools is somewhat as follows:

1. Short course school work in sewing and cooking with women and girls.
2. Demonstration work in sewing, cooking and canning in public schools.
3. Promotion of girls' clubs.

SCHOOL FAIRS, 1921.

The school fair work during 1921 was conducted along the same general lines as in the two former years. A few slight changes were made with the idea of improving certain details. The work in the Olds territory was in charge of Geo. R. Holeton, of the Olds staff.

Ten out of the 24 fairs listed in the last report were taken over by the Youngstown school and one by Gleichen. The number listed this year is not so great, notwithstanding the fact that a number of new centres were established.

To further encourage the showing of livestock classes the Department of Agriculture increased the grant from \$25.00 to a possible \$75.00. The grant is two-thirds of all livestock prize money paid to the amount of \$112.50. Thus to receive the full amount of the grant the local people must pay out at least \$37.50 for livestock prizes from their own funds.

Communities within the territory of the School of Agriculture, Olds, wishing to establish a fair centre were asked to form a local committee to look after the details as follows:

1. Select from seven to twenty-five schools to take part in the work.
2. Receive seeds and deliver same to the schools.
3. Raise money to finance prize list (other than that provided by the Department of Agriculture).
4. Make all local arrangements for the fair.

The School of Agriculture supplied the seeds, instructional circulars, mounting material for plant and insect collections, entry tags, prize lists, prize tags and a grant to the extent of \$75.00 for livestock prizes. A representative of the school went out to help in organizing and supervising on request, judges for the fairs were furnished by the school. The co-operation of the school inspector was secured at practically every centre. The work was begun April 1st, and the last fair was held on October 2nd.

The following classes of exhibits were shown: Garden products, grains, live stock, cooking, canning, sewing, art and manual arts, penmanship, map drawing, and plant, weed and insect collection. The exhibits in all these classes were in most cases good and showed that a live interest had been taken in the work.

The boys received potato seed and the girls flower seeds, and each pupil was given the following kinds of garden seeds: Carrots, beets, parsnips, peas, mangels and turnips.

This year the government grant was withheld in all cases where the school fair was held jointly with the agricultural fair. This was on account of the fact that the popular attractions at the average

agricultural fair detracted the attention of the pupils from their own work, and also the lack of sufficient space to show the exhibits of both fairs. The only joint fair held this year was that at Milnerton. This fair being a straight agricultural fair did not have the detracting influence mentioned.

C. A. Weir, manager of the demonstration farm, Olds, was largely responsible for a live-stock judging competition conducted in connection with the school fair at Olds. This was a competition in the judging of beef and dairy cattle. It was a contest between teams, composed of three pupils, from each school in the fair centre. Each school district in the fair centre selected the team to represent its school. The selection was made a month prior to the date of the fair and the teams met at the O. S. A. on two Saturday afternoons before the fair date, and received instruction in judging. This instruction gave the teams a fairly uniform standing for the competition. In order to encourage interest among the contestants and to provide something that could be held by the winning team and the individual making the highest score as tokens of their achievements a challenge shield was presented to the former and a medal to the latter.

The competition brought out thirteen teams. It was one of the most interesting features of the fair. The enthusiasm shown by the children and their parents was most encouraging and seemed to indicate that they thought the work well worth while from both the standpoint of entertainment and of instruction. The competition was sufficiently successful to impress us with the importance of adding this to the programme of some of the other school fairs in our district during the next season.

The Department of Agriculture each year gives a diploma to the school having the best exhibit in all classes of each fair. These diplomas were framed at the Olds School and sent to the winning schools as shown in the tabulation below:

Fair Centre	Date of Fair	No. of Schools Entering	No. of Pupils Receiving Seeds	Estimated No. of Pupils Exhibiting	Estimated No. of Exhibits	Government Grant Received	School Winning Diploma
Olds	Sept. 10th	22	363	250	500	\$ 55.00	Berrydale No. 409
Three Hills	Sept. 12th	13	271	175	400	4.16	Three Hills Village
Sundre	Sept. 13th	9	135	75	250	39.76	Sundre No. 3848
Elnora	Sept. 15th	9	207	185	500	51.16	Cranstonedale, No. 3944
Delburne	Sept. 16th	10	254	200	500	36.33	Great Bend Cons.
Innisfail	Sept. 17th	8	175	125	375	32.50	Big Bend, No. 809
Stettler	Sept. 19th	20	371	200	400	30.32	Stewartwyn
Donalda	Sept. 20th	11	231	175	400	22.66	Science Mound
Clive	Sept. 23rd	8	206	175	350	40.34	Clive Intermediate
Carstairs	Sept. 23rd	9	121	100	300	28.34	Carstairs Grades 6, 7 & 8
Lacombe	Sept. 24th	10	121	115	500	49.16	Arbordale, No. 543
Didsbury	Sept. 27th	19	424	200	500	29.00	Jutland
Milnerton	Sept. 28th	10	147	135	400	.....	Milner, No. 909
Red Deer	Sept. 30th	15	254	225	500	45.37	Horn Hill, No. 251
Ponoka	Oct. 8th	13	185	90	250	7.67	Ponoka, 7th & 8th Grades
Wetaskiwin	Oct. 7th	21	249	215	500	17.00	John Knox, No. 463
Trochu * .....	.....	10	242	.....	.....	.....	.....
Airdrie * .....	.....	10	190	.....	.....	.....	.....
Rimby * .....	.....	..	...	...	...	.....	.....

Three fairs were cancelled: Airdrie being hailed out. Trochu dried out, and Rimbey organized too late.

The Olds judges also assisted the Youngstown force at the Castor Fair, Sept. 21st, this being an unusually large fair.

Every effort is made to make these fair days enjoyable to the pupils and their parents. At most of the centres a programme of sports was run off while the judging was being done. While judging the live-stock, the judge gives a short talk on the requirements of each class, and states his reasons for placing the animals.

At many of the fairs, talks were given at the conclusion of the judging, dealing with the general work of the fairs, the selection, preparation and arrangement of exhibits, and a statement of reasons for placing certain classes.

A moving-picture outfit was carried by the judges, and films, both comic and educational, were shown the pupils, some of whom had never seen moving pictures before.

Generally speaking, the fairs were all very successful, notwithstanding the dry season and hard times. We expect to increase the number of fairs to at least twenty-five during the coming season.

THE GRASSHOPPER CAMPAIGN, 1921

The spread of grasshopper menace in the province made it necessary in 1921 to establish centers for the distribution of poison material and information. A great deal of education was necessary from the fact that the grasshopper as a destructive insect was almost an entire stranger to many farmers, and also in order that the seriousness of the situation might be brought before the public. The Olds School of Agriculture undertook to cover the same area as is covered by it in school fair work.

The first reports came in about the 30th of May, and were from Grainger, a district on the G. T. R., northeast of Calgary about 60 miles. A representative was at once sent and he found the outbreak to be of a serious nature, but confined to a relatively small area. The district was organized and material obtained at once. The results were satisfactory where the poison mixture was mixed and applied according to instructions. A very busy three weeks were spent visiting reported outbreaks and demonstrating the mixing and applying of the poison. The following places reported outbreaks and were visited: Grainger, Carbon, Drumheller, Rosedale, Wayne, Standard, Rockyford, Three Hills, Acme, Delburne, Trochu, and Irricana.

At the same time another representative covered the district along the C. P. R. from Calgary north and did similar work. Outbreaks were reported as far north as Wetaskiwin. Other reports came from a district lying east from Wetaskiwin and extended as far as Castor.

ORGANIZATION

As far as possible the municipal districts were organized as a unit to carry on the work. These served as suitable centres for distribution. It was found to be much more satisfactory from an economical point of view to have everything handled by the district. However, in some cases outbreaks occurred near a centre which would require the organization of perhaps three municipalities. In this case, it is recommended that an organization such as the U. F. A. take up the matter. It looks as though the work of organizing the centres should be done some time before the outbreak is anticipated. It sometimes occurs that serious damage is done if all the work is left until outbreak reports come in to the office. Delay proves very costly when fighting grasshoppers.

MIXING STATIONS

Generally speaking the best results were obtained when the mixing was done at a central station. It is very thoroughly done and often in their haste individuals fail to note this precaution. As a result, poor results are obtained and the method is blamed. The efficiency of the mixture depends to a great extent on the thoroughness of mixing. It is, therefore, recommended that mixing stations be established wherever possible.

OBSERVATIONS

Where they could be obtained the recommended materials were used. However, it frequently occurred that one or more were not available when wanted. A Verdant Valley farmer used, with good success, a mixture of ground oats, salt, arsenic and water.

Our observations lead us to believe that salt is an important ingredient in districts where there is no alkali.

Spraying with Paris green and arsenic was practised at Rockyford and Drumheller. The results were satisfactory. Of course, the method could only be used when no stock was pasturing.

EDUCATION NEEDED

Much better work can be done when the farmers understand the life history and habits of the grasshopper. For example, some farmers were observed putting straw along the edges of fields long after the insects were hatched and had left the fence-rows. Straw burning was also frequently practised during the day time. Knowledge of the habits of the pests would indicate that the burning of straw should be done only at certain times, otherwise its value is lost. These errors can only be overcome by educating those interested.

OUTLOOK IN THIS DISTRICT

Grasshoppers were not as numerous in this district as in some places. However, there were sufficient to cause alarm for another year. This applies especially to the grain growing areas to the south, east and

north. Past experiences go to show that the grasshopper can be successfully fought, and while one man in a district can do something, the best results are only obtained by united effort.

RESEARCH

The Field Husbandry investigational work carried on at the schools in the past years has been of very considerable extent, and has been very valuable. Field Husbandry instructional and extensional work has gained largely from this. Students and farmers have been given much actual data relating to certain crop and soil problems in their own neighborhood.

Heretofore, this investigational work has been lacking in Animal Husbandry lines and instruction and extension work in the subject has suffered severely from the lack of results of research data. We feel that it is very important that the research work with live stock should be extended as suggested later on in this report. In this report only a few general conclusions are drawn from the results of a small number of the experiments under way at the Olds School of Agriculture. The results of the experiments with crops and soils are being published in a separate report, which will be available some time this year.

The following results of the work with silos and silage covers the only research work we have done as yet with live stock:

SUNFLOWER ENSILAGE

During the past three years, and particularly during the present winter, some sunflower ensilage has been fed on the farm. In each case the main bulk of the ensilage has been oats, and in each case the sunflowers have not been mixed with the oats, but have been put in by themselves so that they formed a definite and distinct layer of silage.

No experiments have been carried on in feeding the different sorts of ensilage, principally because our herd of cattle has consisted of beef breeding cows that were simply on maintenance. However, after allowing a day or two to become used to it, the cattle have eaten the sunflower ensilage as freely and with as much evident relish as the oat silage, and have shown no ill effect in their digestive tracts or otherwise from the change. Apparently, so far as three years of practical experience would show, ensilage made from sunflowers is as palatable and as suitable for cattle as that made from green oats.

From the standpoint of growing and handling the silo crop, sunflowers are somewhat at a disadvantage by comparison with oats, at least with the soil and climate of this station. Though sunflowers on the experimental plots have given high yields—as high as 20 tons per acre—oat crops have also yielded very highly and, excepting last year when hail affected the oat crop, two acres of oats have supplied approximately the same weight of feed as one average acre of sunflowers.

IRRIGATION IN ALBERTA



AN IRRIGATED FARM



IRRIGATING ALFALFA



AN IRRIGATED GARDEN

There is, however, much less work in handling even three acres of oats than in handling one of sunflowers. The oats can be sown more readily, and with less actual work; they require no cultivation; can be cut with an ordinary grain binder; handled readily with ordinary forks and wagon racks, and, finally, are easier to cut and elevate into the silo. Sunflowers, on the other hand require a special seeding machine, much cultivation, some of it hand work, unless they are check-rowed; a special binder; they are heavy and slow to handle in the sheaf, and, finally, are hard to cut, and especially hard to elevate into the silo. Once in the silo, however, sunflowers settle more compactly, without excessive tramping, than oats.

The greater moisture content of the sunflower ensilage, and the fact that it settles very solidly, leads to more difficulty with frozen ensilage.

TRENCH SILO

A trench silo was hastily prepared on the Olds Demonstration Farm during the fall of 1921, and was filled with a mixture of oats and rape. The trench was not completed until the morning on which filling was commenced, and although the material put into the trench was in very poor condition for ensiling, the resulting ensilage has been very satisfactory.

A simple trench four feet deep, twelve feet wide and twenty-four feet long was dug with a plow and slush scraper. The ensilage cutter and engine was set up at one end of this and the trench blown full of a mixture of oats and rape. The rape was used merely because a plentiful supply was at hand that it was impossible to pasture off.

Filling the trench was very simple. The whole blower pipe was removed from the cutting box, merely the top hood being left on the top of the box, and the ensilage was blown into the centre of the trench and spread in the usual manner. This removal of the whole blower pipe materially lessened the power required. In this case a 13 inch cutting box was operated with a 7 h.p. engine. A heavy wind might make filling rather difficult by blowing the freshly cut ensilage about.

The ensilage was firmly compacted into the trench by tramping with a team of horses. The trench was filled to a height of about two feet above the ground level. Because the oats had been cut for a number of days, and were quite dry, several barrels of water were poured over the ensilage. Finally, a heavy land packer was drawn back and forth over the ensilage until it was thoroughly compacted.

In order to determine which was the most satisfactory way of covering the ensilage, half of the trench was covered with straw and a small stack of oats sheaves placed upon it. This part of the trench has not yet been opened at the date of writing.

The other end of the trench was covered with boards and about six inches of earth, some of the earth from the excavating having been

left at hand for this purpose. In January, this end of the trench was opened, and during the month, this half of the ensilage was fed. It was hauled daily to the barn on a sleigh.

The general quality of the ensilage, considering the condition in which it was ensiled, was excellent. Cattle ate it with the same relish they showed for similar material from the regular silo. No larger proportion of ensilage was spoiled than is the case in the stave silo. Nor was the ensilage frozen to a depth of more than one inch.

The general result has been to give the conviction that the trench silo is a satisfactory and practical means of storing succulent feed for winter use and that its only serious disadvantage was in the fact that the ensilage must be hauled daily to the barn.

Unquestionably the trench used this year was not deep enough. Another year it is proposed to deepen the trench to a depth of about eight feet. Greater depth than this would probably increase the difficulty of getting the ensilage out of the trench.

GRASSES

Under the present conditions of farming, it is becoming quite evident that a great many of our soils are being quite seriously depleted in fibre and vegetable matter. The lack of these constituents is due to the frequent introduction of the summerfallow on most farms, to the absence of the grass crops and rotations. If we are to retain the soils of the province in a condition that will produce maximum returns it is essential that rotations including grasses and legumes be introduced on our farms. At the present time we are unable to say what would be a suitable rotation for the average mixed farm. It is expected that something definite on this point will be available in the course of the next few years. For now, let us observe that the prosperous farmers of any district do not confine their farming operations to straight grain-growing. They have on their farms a system of cropping which includes the growing of a number of types of crops which will provide a variety of feed for the stock, to some extent ensure against crop failure and at the same time supply some types of crops which will, while growing, add fibre and vegetable matter to the soils.

The results of the experimental work with grasses at the Olds School of Agriculture place the grasses in the following order from the standpoint of yields: Brome, Western Rye, Timothy and Meadow Fescue.

In legumes the only promising crop under test at present that could be recommended would be sweet clover.

SEEDING TO GRASSES AND CLOVERS

The results of the experiments at the O.S.A. indicate that it is very much easier to procure a catch and obtain a good stand of grasses and clovers by seeding without a nurse crop. Grasses and clovers should only be seeded on well prepared, fertile and clean land that contains considerable moisture. The seeds should be sown in May. They should be covered to a depth of from one and one-half to two inches. With this deep seeding, the grass or clover seed is much more likely to germinate in a very dry year. It is not profitable to leave dry land in grass for more than three years.

Experiments that are now under way or planned for the immediate future are—

(A) *Field Husbandry*:—

1. Comparison of a goodly number of crop rotations.
2. Tests with dates, rates and depths of seeding the various kinds of farm and garden crops.
3. Experiments to ascertain which are the superior varieties of the various kinds of farm and garden crops.
4. Tests with the use of barn-yard manure; to determine the value derived from its use with different kinds of crops; to determine the best methods of application.
5. Tests with cultural methods for summerfallow, stubble, sod land and weed control.
6. Improvement by crossbreeding, importation and selection with all crops to develop new varieties and strains that will be better adapted to our conditions.
7. A comparison of the value of our inter-tilled crops compared with summerfallow.
8. A study of the relative value of the different methods of treatment for summerfallow from the following standpoints:
 - (a) Moisture conservation.
 - (b) Converting inert plant food to an available form.
 - (c) Effect on soil fibre.
9. Tests of various methods for building up or maintaining soil fibre:—
 - (a) Barnyard manure.
 - (b) Green manure.
 - (c) By growing clovers.
 - (d) By growing grasses.

(B) Scientific Experiments:—

1. Anelementary study of insect life, habits and control measures.
2. A study of the history of control measures for some of the most common fungus diseases.
3. Water requirement of crops under the following headings:—
 - (a) Economic use of soil moisture by different kinds and types of plants.
 - (b) Ability of the various crops to withstand drought.
 - (c) Ability of crops to extract soil moisture from the soil.
4. Loss of moisture from fallow surfaces, both mulched and un-mulched and from various kinds of cropped surfaces.

(C) Horticulture Experiments:—

1. Tests with all kinds of small fruits.
2. Tests with some promising kinds of tree fruits.
3. Tests with varieties of fruits:
Variety tests with vegetables.
4. Co-operative work to stimulate an interest in establishing fruit plantations on many farms.
5. Variety tests with trees, shrubs and flowers.
6. Co-operative work, in the way of advice and actual assistance to farmers, in the establishment of tree plantations and in the improvement of their grounds, especially in treeless districts.

(D) Livestock Experiments:—

1. Experiments for the purpose of determining the most economical and efficient feeds, roughages and concentrates, for different kinds of stock.
2. The value of sweet clover as a hay for supplying a leguminous roughage for stock.
3. Methods of housing, feeding and exercising breeding ewes and sows during winter.
4. Cost figures on producing different types of stock to different stages of development.
5. A certain amount of work in grading up cattle and sheep. Ordinary range stock to be used to start with, using a desirable pure-bred ram or bull. Data, while of value, would be of secondary consideration compared with the actual demonstration.
6. Livestock work should not be standardized at all schools, but each school should be allowed to develop that particular line that seems to be most fruitful of results under its special conditions.

Respectfully submitted,

F. S. GRISDALE,

Principal.

Report of the Raymond School of Agriculture

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I beg to submit herewith the second annual report of the Provincial School of Agriculture, Raymond, for the year 1921.

The 1921-22 school session commenced on October 27, 1921, with a complete staff. The names of the members of the school staff and their respective departments are given below:

O. S. Longman, B.S.A., Principal, Instructor in Agronomy;
 Stace H. Gandier, B.S.A., Instructor in Science;
 Wm. D. Hay, B.S.A., Farm Manager, Instructor in Animal Husbandry and Farm Management;
 J. J. Loughlin, Instructor in English and Mathematics;
 Verne R. Hillman, B.S.A.E., Instructor in Farm Mechanics;
 E. E. Eisenhauer, B.S.A., B.S. (C. & I.E.), Instructor in Irrigation;
 Dr. C. J. A. Haworth, V.S., Instructor in Veterinary Science;
 W. J. Beckett, Instructor in Dairying;
 A. N. McDonald, Instructor in Dairying;
 John Mehew, Instructor in Blacksmithing;
 Miss J. De Guerre, Instructor in Home Economics;
 Miss W. A. Suttaby, Instructor in Home Economics.
 Miss Marion Lavelle, Instructor in Home Nursing;
 Miss M. McKean, Stenographer.

1921 TERM

The closing exercises of the 1921 Term took place on March 25, 1921. Mr. J. E. Hodgson, Supt. of Schools, Lethbridge, delivered the valedictory address, and presented the diplomas to the graduating students.

Addresses were also delivered by President H. S. Allen, of Raymond; President H. E. Wood, of Cardston, and the Principal.

ENROLMENT, 1921-22

There has been a noticeable reduction in the number of students enrolled at the Raymond Agricultural School for the present term, as compared with last year's attendance. This decrease is due almost entirely to a series of crop failures covering a period of five years. In addition, the economic depression which developed in the fall of 1921, made it impossible for a large number of prospective students to attend this school.

Fifty-six students were enrolled during the term in the agricultural and domestic science classes. The average age of the students enrolled in the above classes was 20.3 and 18.6 years respectively.

Respecting previous education 25 per cent. of the men have completed their public school training and 45 per cent. of the women have high school standing.

COURSES OF INSTRUCTION

The instruction given in the Raymond School of Agriculture is similar to that given in the other schools of agriculture, and to that outlined in the official School Calendar. As the Raymond School of Agriculture is located in an irrigated district, a special course in irrigation has been added to the regular course. An outline of the irrigation course is given herewith:

1. Irrigation in Canada.
2. Sources of Supply.
3. Terms Used.
4. Irrigation Implements.
5. Methods of Application.
6. Time of Application to Various Crops.
7. Location of Farm Ditches.
8. Measurement and Measuring Devices.
9. Experimental Work and its Application to the Farmer—
 - (a) Duty of Water.
 - (b) Seed Production.
 - (c) Pasture and Grasses.
10. Relation to Weeds.
11. Relation to Soil Drifting.
12. Relation to Alkali.
13. Relation to Insect Control.
14. Relation to the Home and Permanent Agriculture.
15. Crops and Increased Returns.
16. Irrigation Laws.
17. Systems owned by Corporations vs. Farmers.

Mr. E. E. Eisenhauer, B.S.A., B.S. (C. & I. E.), was appointed during the summer to give special instruction in irrigation. A very practical course was given during the term 1921-22. Mr. Eisenhauer gave similar instruction in the Schools of Agriculture at Gleichen and Claresholm.

EXTENSION WORK

The chief extension work has been in organizing and conducting School Fairs, assisting in the control of the grasshopper menace, and the conducting of Institute meetings.

The School Fair work was under the direct supervision of Mr. W. S. Benn, member of the school staff. These school fairs were conducted in accordance to rules and regulations specified in the official School Fair Bulletin, issued by the Provincial Department of Agriculture. During the summer months each school was visited, and the pupils were given instruction in methods of caring for and preparing their exhibits for the School Fair. In addition to assisting the pupils, the Raymond Agricultural School received wide publicity in every district holding a school fair.

The following table gives a complete summary of the School Fair work conducted from the Raymond School during the past summer:

Name of Centre	No. of Entries	No. of Schools Competing	Approx. No. of Children	Amount paid in Prizes
Cardston	1567	22	1200	\$ 315 80
Foremost	350	16	200	153 96
Manyberries	691	11	175	191 00
Raymond	1633	15	675	150 50
Bow Island	325	4	115	No Cash
Magrath	1800	15	225	150 00
Irvine	300	10	208	100 00
	6,766	93	2,798	\$ 1,061.26

GRASSHOPPER PEST

During the past summer the grasshopper menace was quite serious throughout the southern part of the province.

The Provincial Dept. of Agriculture, through the Agricultural School, co-operated with the Dominion Entomological Branch in combating this plague.

The method of combating was by means of poison bait. The Provincial Dept. of Agriculture purchased the ingredients of the bait in carload lots. This material was placed at the disposal of the Agricultural School and sold to the farmer at cost.

Over twenty meetings were held in the infested area, and farmers were advised regarding methods of control. They were urged to organize, to establish mixing stations and to combat the pest by united and community effort.

The bait proved very effective as a means of control when properly applied. Better results would have been obtained if the farmers, as a whole, had been in a financial position to purchase and distribute greater quantities of poison. In many instances no attempt was made to control the pest. Finally, a period of drought developed, and as a result, many farmers became discouraged and considered it poor economy to try and save a crop that was practically lost from lack of moisture.

The result of this combination of circumstances is, that millions of eggs were laid during the autumn, and a serious outbreak is almost sure to occur in the summer of 1922 unless some unforeseen force intervene s

MEETINGS

During the year the staff of the school attended fifteen farmers' meetings, and gave addresses on subjects of agricultural interest. Five Agricultural Society Fairs were attended and various classes of exhibits judged, and other assistance rendered.

In addition to the above, over 2,500 letters and circulars were mailed from the school office.

DRY LAND EXPERIMENTAL WORK

The following is an outline of the crop and rotation experiments established at this school during the past year:

1. *Rotations:*

- (1) Wheat continuously.
- (2) Wheat manured once in four years.
- (3) Brome Grass continuously.
- (4) Alfalfa continuously.
- (5) Wheat, Wheat, Oats, Summerfallow (Alfalfa and Winter Rye 4 years down).
- (6) Wheat, Oats, Barley seeded down; Winter Rye and Brome 3 years.
- (7) Wheat, Summerfallow.
- (8) Wheat, Wheat, Summerfallow.

- (9) Alfalfa in rows 4 years, down, Wheat, Corn. Wheat,
- (10) Wheat, Summerfallow, Wheat, Corn, Brome, 3 years down.
- (11) Summerfallow, Fall Rye, Oats (seeded), Hay, Hay, Wheat.
- (12) Wheat, Corn, Wheat (seeded), Winter Rye and Sweet Clover.
- (13) Wheat, Corn, Wheat, Summerfallow.

2. *Summerfallow vs. Intertilled Crops*.—Experiments include tests with Corn, Roots, Sunflowers, Potatoes and Green Feed.

3. *Cultural Methods*.—Including tests with different depth and dates of plowing, also various methods of surface cultivation.

4. *Farm Manure*.—Experiments include tests to determine the proper methods and time to apply barnyard manure.

5. *Green Manure Experiments*.

6. *Subsoiling Experiments*.

7. *Variety Experiments*.—Includes tests of varieties of Wheat, Oats, Barley, Flax, Rye, Corn, Clovers, Alfalfas, Grasses, Roots, Potatoes, Millets, etc.

8. *Dates of Seeding Experiments*.—Includes tests as to the proper date to sow cereals, roots and forage crops.

9. *Grass-seeding Experiments*.—Includes tests to determine the value of nurse crops and the best methods of seeding grasses under semi-arid conditions.

METEOROLOGICAL RECORDS

Equipment has been provided for the taking of daily records in this work. Temperatures, precipitation, evaporation and sunshine are recorded.

The following table shows records to date:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1920—Precipitation	*	*	*	4.78	1.32	.40	2.77	.30	.12	.84	.45	.65
1921—Precipitation	.60	.80	1.52	.94	1.61	.57	3.63	.45	.49	.15	1.6	.45
Temperature—Max. Average ..	*	*	*	*	60.09	78.74	80.9	79.1	66.0	66.3	36.12	34.16
Temperature—Min. Average ..	*	*	*	*	37.0	46.11	46.9	47.5	37.0	37.6	21.8	21.9

* No available records.

SCHOOL FARM

The school farm consists of about 290 acres of irrigable land. Most of the farm was under crop during the past season. The crops grown included wheat, oats, barley, winter rye, potatoes, corn, sunflowers and alfalfa.

During the summer a new stave silo, 100 ton capacity, was erected at one end of the cattle barn. A granary was also erected. This latter building is connected with the machinery shed, which makes a very convenient and serviceable arrangement.

Considerable work was done with respect to surveying and running irrigation ditches. This work is to be continued during the coming year.

Respectfully submitted,

O. S. LONGMAN,
Principal.

Report of the Gleichen School of Agriculture

H. A. CRAIG,
Deputy Minister of Agriculture.

SIR,—I beg to submit the annual report of the Gleichen School of Agriculture for the year 1921.

The members of the staff of the Gleichen School of Agriculture are as follows:

G. B. Bodman, B.S.A., Principal, and Instructor in Science;
R. Austin, B.S.A., Farm Manager and Instructor in Animal Husbandry;
E. E. Eisenhower, B.S.A., B.S. (C. & I.E.), Instructor in Irrigation;
W. J. Hoover, Instructor in Mechanics;
H. McArthur, B.S.A., Instructor in Field Husbandry;
P. A. MacDougall, B.A., Instructor in English and Mathematics;
C. W. J. Haworth, V.S., Instructor in Veterinary Science;
W. J. Beckett, Instructor in Dairying;
Miss F. M. Morton, Instructor in Home Economics;
Miss E. J. Fee, B.S., H.Ec., Instructor in Home Economics;
Miss Marion Laval, R.N., Instructor in Home Nursing;
Miss M. Church, Stenographer.

A number of changes in staff have taken place since the preceding year. Mr. M. L. Freng, as farm manager, left the school to become district representative in the Lethbridge district, his place being filled by Mr. R. Austin, whose experience gained in visiting many of the most prominent livestock breeders in the British Isles while overseas is of great value in the classroom. Mr. E. E. Eisenhower, with special irrigation training at Fort Collins, Colorado, has charge of the irrigation instruction and during the summer months supervised the irrigation on the farm, both here and at Raymond. Mr. Scouten's resignation from the Field Husbandry department left a vacancy which was filled in May, 1921, by Mr. H. McArthur, who in addition to the instructional work during the winter months, has charge of the experimental plots.

INSTRUCTIONAL WORK

An ideal arrangement exists in the system of agricultural education in the Province of Alberta. The province covers a wide area, and considerable differences in conditions exist in the various parts from the standpoint of crop production. The Gleichen School of Agriculture has territory tributary to it which is bounded roughly by the C. N. R. Calgary to Drumheller line and the Red Deer River on the north-west and north, by the Saskatchewan boundary to the east, and the C. P. R. lines from Walsh to Suffield and Suffield to Lomond on the south; the area is finally enclosed by an imaginary line drawn from the north end of Lake Macgregor to Carseland, and thence along the C. P. R. to Calgary.

It is the endeavor of the School of Agriculture to maintain as close touch as possible with the farmers resident in this area. The school should be especially qualified to do this, and endeavours to do so in three different ways, namely, by carrying on work that is instructional, investigational, and extensional in nature.

The instructional work in the school is carried on during the five winter months from November to March inclusive, drawing students from the territory outlined above. During the remainder of the year, the school staff is available for both investigational and extension work. The former work is carried out on the experimental plots which will provide a source of information regarding crop production which will be of tremendous value not only from the standpoint of general information for publication, but also in supplementing the classroom discussion during the winter. Such information will become more and more valuable and complete from year to year, as it is only by a comparison of results over a long period of years, under different seasonal conditions, that reliable data can be secured. Those of the staff not engaged in work of an investigational nature are free for extension work of various kinds. The closer the co-ordination that can be made to exist between these three branches of our work the better, as the possibilities of such conditions are very great. The investigational results can be utilized to tremendous advantage in both classroom during the winter and in extension field during the summer months.

SCHOOL ATTENDANCE

The enrolment during the winter 1921-22 was as follows:

First Year Students in Agriculture.....	16
Second Year Students in Agriculture	8
First Year Students in Home Economics	5
Second Year Students in Home Economics.....	2

GRADE STANDING

Grade or Equiv.	V.	VI.	VII.	VIII.	IX.	X.	XI.
Number	1	1	8	12	4	4	1

During the month of October, and prior to the opening of the School for the fall term, indications pointed to a much larger attendance than that which materialized. Many who were planning on attending the school had sent in their applications for admittance, but were forced to give up the idea owing to crop returns.

Of the total number of registered students only eight have Gleichen as their address. Of this number, only four come from homes in the town itself, *i.e.*, eighty-seven per cent. of the student enrolment consists of men and women actually engaged in agriculture or from farm homes, within the territory served by the Gleichen School of Agriculture.

SUBJECTS

The subjects taught at the School fall naturally into two general groups—the practical and the academic.

The School of Agriculture being especially devised to teach the vocations of farming and home-making must of necessity provide practical instruction for its students. The subjects which are of a more academic nature, however, are equally essential to those who plan on returning permanently to the occupation of farming, etc., and still more so for those who plan on passing into the University of Alberta for the purpose of obtaining their agricultural degree (B.S.A.), or their degree in Home Economics (B.H.Ec.). The major part of the agricultural students' time is taken up with the following subjects: Animal Husbandry, Field Husbandry, Farm Mechanics, Irrigation, Veterinary Science, Dairying, Farm Management, Soils, Poultry, Horticulture and Entomology. Under the more academic subjects may be listed, English, mathematics, chemistry, physics, bacteriology, botany and civics.

The Home Economics students devote most of their time to cooking, foods and dietetics, sewing, textiles, laundry, home nursing, household administration, sanitation, poultry, dairying and horticulture, while in addition they take English, mathematics, bacteriology, chemistry and civics. The importance of the English and mathematics can hardly be over emphasized, as it is found that all our students need every minute of the time spent in the study of those two subjects, and would profit considerably by more instruction in them, if the time could be spared from an already full programme.

Public speaking is given considerable attention, both in the English classroom and during the literary meetings. Classroom debates are arranged, and judges and critics appointed, under the supervision and direction of the English instructor.

ANIMAL HUSBANDRY

A good feature of the Animal Husbandry instruction during this winter has been the provision made for the shipping in of livestock of different breeds for judging and scoring purposes. Two cars of livestock visited the Gleichen School of Agriculture during December and January expressly for the benefit of the students. The contents of each car of stock are given below:

CAR No. 1.

3 Aberdeen-Angus cows
3 Hereford cows
2 Ayrshire cows
2 Leicester ewes
2 Berkshire sows
3 Yorkshire hogs
Poultry—Barred Rocks, White Wyandottes

CAR No. 2

3 Shorthorn heifers
3 Milking Shorthorn cows
3 Jersey cows
3 Holstein cows
3 Oxford ewes
3 Shropshire ewe lambs
3 Duroc-Jersey cows
2 Tamworth sows
Poultry—Rhode Island Reds, Buff Orpingtons, White Leghorns.

This material was of the greatest use in the judging ring, providing the students with representative animals from the most important breeds. Further, to enable our agricultural students to become familiar with the best in livestock, the second year class attended the Calgary Winter Fair during December, accompanied by their Animal Husbandry instructor. Arrangements are being made for trips to breeders in the vicinity, for judging purposes, before the end of the term.

MECHANICS

Both first and second-year men are given a thorough training in the principles and operation of gasoline engines. Due to the kindness of local agents and the machine firms which they represent, and private engine owners of the town, our laboratory has always been well supplied with engines for demonstration work and student operation. At the present time we have seven stationary engines (including our own International) and three tractors (a Massey-Harris, International, and our own Case).

The engine classes are only one phase of the mechanics' work, which also includes: carpentry, forging, horse-shoeing, farm machinery, draughting and rope splicing.

PRIZES

A number of prizes are open for competition by the students. For competition by students in agriculture, the following have been offered:

Animal Husbandry Medal—Royal Bank of Canada.
Prize for best bushel of Marquis Wheat—Alberta Pacific Grain Co.
Prizes for barn plans—Western Retail Lumbermen's Association.

In Home Economics, the following may be contested:

General Proficiency Cup—Canadian Bank of Commerce.
Prize for preparing and serving meals—Ogilvie's Flour Mills, Medicine Hat.

A Public Speaking contest, for which a cup is awarded, is open to all.

STUDENT ACTIVITIES

Since the opening of the School, in October, 1920, the student body has at all times been active in organization work for athletic, literary, and social programmes throughout the winter months. While the initial step in organization work is usually undertaken by the more experienced students, all are encouraged to take part and are very responsive. The societies established have been literary, athletic and social societies, with a student committee appointed for each, consisting of president, secretary and executive, whose duty it is to be responsible for the society's activities. In addition, a staff representative is appointed to each to act in an advisory capacity. The literary and social evenings are held in the assembly hall on Friday evenings during the term. The athletic society, with the assistance of the mechanics instructor, has built a good rink adjacent to the shop building, and matches have been arranged between years, with the high school, and

with the Olds School of Agriculture. An inter-agricultural school debating shield has this year been offered by the Department of Agriculture, and a debating schedule drawn up between the southern schools of agriculture. In the preliminaries, Olds debated Gleichen, both here and at Olds, the affirmative team remaining at home in each case. Judges were obtained from Calgary, and the results of the two debates were:

At Olds—Affirmative 89, Negative 81.

At Gleichen—Negative 73, Affirmative 71.

Aggregate Scores—Olds 162; Gleichen 152.

The value of organized recreation amongst the students is self-evident, and as proof of its value to the graduate, whether boy or girl, may be mentioned the fact that throughout the rural communities of the province, ex-students may most frequently be found in the lead whenever progressive action is necessary.

SPECIAL LECTURERS

During the term valuable lectures have been given by officials from the Department of Agriculture Mr. H. A. Craig, Deputy Minister; Dr. P. Talbot, Provincial Veterinarian; Mr. A. Galbraith, Superintendent of Fairs and Institutes, and others have visited the school from time to time for this purpose.

INVESTIGATIONAL WORK

Of primary importance in agricultural investigational work are those researches which deal with the soil and the production of crops. The maintenance of soil fertility and the proper management of the soil in order to produce the greatest permanent returns is the most fundamental need in successful agriculture. Furthermore, investigations in Field Husbandry need less elaborate equipment and outlay in order to be carried on successfully and hence operations in Field Husbandry may be commenced earlier at a new institution. The investigational work at the Gleichen School of Agriculture has so far been confined to experiments dealing with the production of crops and soil management.

EXPERIMENTAL FIELD

In 1920 most of the land to be given over to experimental plots was summerfallowed. In the spring of 1921 this land was staked out into ranges ready for seeding, and the experiments outlined below were commenced. The total area in dry land experimental plots during 1921 was approximately 12½ acres. Complete records of yields, etc., have been kept, but the results are of little value until comparisons may be made over a series of years, and hence are not given. Rotation plots are one-fiftieth of an acre in size, while all others are one-hundredth of an acre. The plot work is in charge of Mr. McArthur.

ROTATIONS

No.	Years	CROP ROTATION
I.	1	Wheat continuously.
II.	4	Wheat continuously, manured once in four years at 12 tons per acre.
III.	1	Summerfallow continuously.
IV.	1	Brome continuously.
V.	1	Alfalfa continuously.
VI.	3	Wheat; wheat; summerfallow.
VII.	2	Wheat; summerfallow.
VIII.	4	Wheat; oats; barley; summerfallow.
IX.	4	Wheat; summerfallow; wheat; corn.
X.	7	Alfalfa for four years; wheat; summerfallow; corn.
XI.	4	Wheat; one-half plot oats, other half plot barley, seeded down to Western Rye and Alsike; half-plot oats (green feed), other half hay; half plot summer-fallow, half plot pasture.
XII.	4	Wheat; oats seeded down to Brome and Sweet Clover; hay; hay or pasture.
XIII.	8	Summer-fallow half of plot, corn sown on half of plot; wheat seeded down to Western Rye and Brome; hay; hay or pasture; hay; wheat; oats; green feed.
XIV.	3	Summerfallow; wheat; sunflowers.
XV.	3	Summerfallow; sunflowers; wheat.
XVI.	4	Summerfallow; wheat seeded to brome; hay; hay.
XVII.	5	Sunflowers; oats seeded to brome; hay; hay break in July.
XVIII.	7	Sunflowers; oats seeded to brome; hay; hay; wheat; summerfallow: fall rye.
XIX.	4	Fall rye; sunflowers; wheat; summerfallow.
XX.	4	Wheat; oats; fall rye; summerfallow.
XXI.	3	Summerfallow; wheat; fall rye.
XXII.	4	Fall rye, seed down with brome in Spring; hay; hay; wheat.
XXIII.	4	Wheat; summerfallow; fall rye; barley.

SUMMERFALLOW TREATMENT

This series of experiments consists of a comparison of seven different methods of summerfallowing. Each summerfallowed plot is part of a three-year rotation, consisting of the following: Summerfallow, wheat, oats. Hence each summerfallowed plot is followed the next year by a wheat crop, and the last year (before again being summerfallowed) by an oat crop. The different methods of summerfallowing are as follows:

Method No. 1—Plow shallow in June and cultivate as required.

Method No. 2—Plow deep in June and cultivate.

Method No. 3—Plow August 1st, cultivate as required.

Method No. 4—Plow deep in June and merely clip weeds with hoe, do not cultivate.

Method No. 5—Plow deep in June and leave untilled.

Method No. 6—Plow shallow in June, harrow in September.

Method No. 7—Plow shallow in June and harrow as required.

FARM MANURE TESTS

Method Number.	Crop Rotation.	Manure Application.
1	Oats; wheat; summerfallow.	10 tons per acre applied to oat stubble in fall; fall plow.
2	Oats; wheat; summerfallow.	10 tons per acre applied to oat stubble in spring; spring plow.
3	Oats; wheat; summerfallow.	Top-dress wheat.
4	Oats; wheat; summerfallow.	10 tons per acre applied to S.F. before plowing.
5	Oats; wheat; turnips.	15 tons per acre applied to wheat stubble in spring; spring plow.
6	Oats; wheat; sunflowers.	15 tons per acre applied to wheat stubble in spring; spring plow.
7	Oats; wheat; potatoes.	15 tons per acre applied to wheat stubble in spring; spring plow.
8	Oats; wheat; rape (manured) Oats; wheat; rape (not manured).	15 tons per acre applied to wheat stubble in spring (half plot only); spring plow.

CULTURAL METHODS

A comparison of soil tillage methods is to be carried out in these experiments, the four-year crop rotation of barley, wheat, oats and summerfallow being identical in each case.

Method Number.	Treatment given to Barley and Wheat Stubble.
1	Fall plow 8"; harrow in fall; harrow, seed and harrow in spring.
2	Fall plow 4"; harrow in fall; harrow, seed and harrow in spring.
3	Fall plow 6", harrow and pack in fall; harrow and pack in fall; harrow, seed, harrow and pack in spring.
4	Fall plow 6", leave untilled in fall; harrow, seed and harrow in spring.
5	Spring plow 8"; harrow, seed and harrow.
6	Spring plow 4"; harrow, seed and harrow.

SUBSOILING

One experiment in subsoiling has been begun, and consists of subsoiling the summerfallow by stirring 4 inches without throwing up on the surface, in the rotation: Oats, wheat, summerfallow.

GRAIN VARIETY TESTS

The following varieties were sown, and will be added to from time to time as desired:—

Wheat.	Oats	Flax.
Marquis Ruby Kubanka Red Bobs Red Fife Kitchener	Banner Victory Abundance Daubeney O.A.C. No. 72 Liberty Leader	Wilt Resistant No. 52 Common Selected
Barley.	Peas.	
Mensury Bark Trebi Hannchen Guy Mayle O.A.C. No. 21	Prussian Blue Golden Vine Arthur Solo White Alaska White Alberta	

Eight varieties of fall rye are being tested, also rates of seeding this crop.

SUNFLOWERS

Dates of sowing sunflowers are being studied, five plots having been sown during 1921, on May 4th, 14th, 23rd; June 3rd and 13th. The distance between rows is 3 feet, and between plants 8 inches.

SWEET CLOVERS

Methods and rates of sowing white and yellow sweet clovers are being tried out, also sowing same with nurse crops of wheat, oats and barley.

GREEN FEED TESTS

Twelve green feed mixtures were sown, and in certain cases show rather striking results. These are given below, but since they represent one year's results only, are not to be taken as final:

Kind of Crop	Rate of Seeding per Acre	Yield (in tons) per Acre	Duplicate Yield	Estimated % Hail Damage
Oats	4½ bus.	6 25	4 45	25
Oats	3½ bus.	8 75	5 10	25
Oats	2½ bus.	9.50	5.56	25
Spring Rye	2 bus.	4.35	3.10	20
Sunflowers	12 lbs.	13.05	13.85	20
Vetch	1½ bus.	.....	.....	10
Peas and Oats	4 bus. (1:1)	7.25	6 45	20
Peas and Oats	4 bus (1 of peas: 2 of oats)	6 70	5 80	20
Rye and Oats	3 bus. (1 of rye: 2 of oats)	5.25	4 00	20
Vetch and Oats	3 bus. (1 of vetch: 2 of oats)	8 25	5 40	20
Sunflowers and Oats....	10 lbs.: 2 bus.	15.15	15.35	20
Sunflowers and Fall Rye	10 lbs.: 1½ bus.	13.50	12.10	15

The southern and western parts of the school land were badly infested with stink weed when the land was purchased. This necessitated continuous hoeing and hand-pulling during the past year. It was endeavoured to prevent any plants from maturing seed, and it is hoped that the weed will practically be brought under control in this manner.

INCREASE WORK

Part of the land which would otherwise have been laid out in experimental plots was given over to increase work during 1921, owing to the school drainage system underlying that portion of the land. Upon this area were planted Gold Coin potatoes, Stratagem garden peas, sweet peas, and trees (cuttings and seedlings). Both garden peas and potatoes yielded well, the latter being stored in a root pit over winter. They will be used for school fair distribution purposes in 1922. The sweet peas did not mature. A splendid growth was made by the trees, which included Russian Poplar, Manitoba Maple, Red Willow and Laurel-leaved Willow.

These will be used for transplanting in the grounds and wind-breaks.

METEOROLOGICAL RECORD

Maximum and minimum thermometers, an evaporimeter and a rain gauge have been installed at the School.

Maximums and minimums for 1921, and precipitation in inches of rainfall are given below:

Month	Maximum		Minimum		Precipitation
	Temp.	Date	Temp.	Date	
January	+43°F	15th	-15°F	31st	.72 ins.
February	+52°	28th	-16°	1st & 2nd	.325
March	+50.9°	1st	-28.8°	12th	1.07
April	Incomplete	....	+18.4°	26th*	1.35*
May	Incomplete	....	+27.5°	28th	.96
June	+87°	25th	+34°	15th	.12
July	+101°	21st	+46°	9th & 30th	3.16
August	+87°	31st	+34°	27th	2.98
September	+76°	19th	+22°	16th	1.22
October	+81°	7th	+19°	25th	.20
November	+59°	4th	-30°	20th	1.14
December	+46°	4th & 13th	-27°	20th	.10
					Total precipitation 13.34 ins.

* Incomplete—April 13th to 26th omitted.

EXTENSION WORK

SCHOOL FAIRS

During the past season the School Fair work carried on from the Gleichen School of Agriculture included the following fairs:—

Brooks—September 20th.
Bassano—September 16th.
Strathmore—September 21st.
Suffield—September 9th.
Gleichen—September 23rd.

The work at this School was in charge of Mr. P. A. MacDougall, Instructor in English and Mathematics. During the summer he was accompanied by Miss Morton, home economics instructor, when the participating schools at each centre were visited, and talks were given toward encouraging the children in their work and giving them as much help as possible in methods of preparation of exhibits, etc.

Considering the season and crop returns during 1921, the interest displayed in the School Fairs coming under our supervision was very creditable. In fact, interest in the school fair seems to be maintained even in the worst season, provided the committee is alive to its responsibility and the secretary interested in the work.

A keen interest was aroused amongst the children in the principles and practices of agriculture and homemaking at every school fair and in every school taking part. The parents' interest was very evident. The success of the fair in the final analysis really depends upon the teacher, and for this reason the value of visiting both school and teacher, and enlisting the sympathy and support of the latter during the summer months, may be emphasized. There is a splendid opportunity for development in this direction, as close contact between agricultural school and public school is clearly advantageous in a rural district. New school fair centres will be organized during 1922.

The names of the schools winning the diplomas presented by the Department of Agriculture were:

Heligoland (Suffield Fair).
Brooks School (Brooks Fair).
Bassano (Bassano Fair).
Gleichen (Gleichen Fair).
Orange Valley (Strathmore Fair).

In October, the Suffield and District School Teachers' Convention was addressed by the Principal on the subject of School Fairs.

GRASSHOPPER CAMPAIGN

In the year 1919, an outbreak of grasshoppers occurred in the south-western part of the province. Due to poor seasonal conditions little was accomplished in the way of persuading those with infested fields to combat them, as the argument was advanced by them that the crop returns would not warrant any expenditure in this direction. As a result the pest spread over a very much larger area the following year. During 1920 a mixing centre was established at the Gleichen School of Agriculture, and, by an arrangement with the Municipality of Marquis, farmers in the municipality and the organized territory in the vicinity of Gleichen received the mixed bait. From observations made during 1920, it was evident that preparation for control measures would have to be made for an even greater area in 1921, than that infested in the preceding year. The Department of Agriculture made arrangements for the placing of large quantities of bran, molasses, arsenic and Paris green at the Gleichen School. This was to be sold at cost price, to the purchasers. The School took entire charge of the weighing out, sale and shipping of this material to points within its territory. The prices charged were: Bran, \$1.25 per 100 lbs.; molasses, 5½c. per lb. (65c. per gallon); arsenic, 30c. per lb.; Paris green, 65c. per lb. The total quantity of these materials sold for poisoning purposes, and value of same is given below:

	Amount	Value.
Bran	87,300 lbs.	\$ 1,091 25
White Arsenic	6,987 lbs.	2,096 .10
Paris Green	400 lbs.	260 .00
Molasses	30,867 lbs.	1,697 .68½
Aggregate	125,554 lbs.	\$ 5,145 93½

Of the above quantities, 13,935.2 lbs. (value \$776.43) of molasses were secured direct from the Calgary Stock Yards, and the L. T. Mewburn Co., Calgary, and though handled by the School and turned over to the farmers at the purchase price, were not originally purchased by the Department of Agriculture. This amount, however, has been included in the aggregate, as it gives a more reliable indication of the extent to which poisoning was carried out in the territory served by this School.

Tabulated according to districts, the distribution of bait was as follows:

District	Poison	Bran	Molasses
Bassano and Crowfoot	42 lbs.	.. ..	.. ..
Cluny and Milo	327	11,000	696
Gleichen	3,838	27,900	21,196
Grainger	600	16,000	3,505
Namaka	340	4,500	1,352
Rosebud	60	.. ..	378
Standard	330	.. ..	.. ..
Strathmore and Carseland	1,830	27,900	3,740
Vulcan	20	.. ..	.. ..
Totals	7,387	87,300	30,867

This table can only be taken as an approximation, however, since great quantities were brought by car or team, being sold right at the School. These sales have all been tabulated under Gleichen district, although many of those purchasing in this manner came from some distance away, and nearer to other towns. Many of the districts mentioned obtained their supplies direct from the government representatives in Calgary when more convenient. Of these amounts we have no record.

The formula recommended is given below, and is the one decided upon by both Provincial and Dominion officials:

Paris Green or White Arsenic	1 lb.
Bran, or Bran and Sawdust, equal bulk	25 lbs.
Molasses	2 quarts
Water	2 to 3 gals.
Lemons or Oranges (juice and rind)	3 fruits
(One pound of salt makes a cheap and efficient substitute for the fruit.)	

A consideration of this formula will show that the poison, bran, molasses ratio (by weight) is 1.25: 6 (approx.), whereas the ratio of actual amounts sold for poison purposes from the Gleichen School of Agriculture is 1:11.8:4.2. This shows that about equal quantities of bran were purchased from some other source, and about half as much molasses must have been obtained elsewhere than through the School of Agriculture, provided that this formula was adhered to. Since it was the one given publicity that is a reasonable assumption, although many cases were observed where the formula had been modified to a considerable degree and good results were still being obtained. A number of enquiries were sent out requesting some sort of estimate of net saving resulting from systematic poisoning of the hopper in the early stages. However, very little information of a definite nature could be secured, though individuals and municipalities replying were unanimous in stating that good results were obtained in all cases if the poisoning were done properly.

Directions for mixing and distributing the bait were given to all who obtained the poison locally. Meetings for the purpose of securing organization in the infested areas and giving information re control were addressed at Gleichen, Baintree, Rosebud, Dalemead, Craigantler, Travers, Bassano, Rosemary, Iddesleigh, Bindloss and Atlee. Farmers were personally visited also in many instances, and given whatever assistance possible.

Every indication points to an infested area much greater in extent during 1922 than was the case in 1921. From the reports received at meetings held along the Empress-Bassano line, and on the Lomond branch, those districts should be prepared for a serious condition in 1922.

The kinds of grasshoppers observed to be most prevalent were the Roadside, the Lesser Migratory and the Two-striped grasshopper. This latter kind was especially noticeable around Gleichen.

SCHOOL GROUNDS

A number of trees, which included Russian Poplar, Manitoba Maple and Red Willow were received at this point from the Dominion Forestry Station at Sutherland, Saskatchewan. These were planted in the early spring in wind-breaks and nursery rows about the buildings and grounds; supplemented by a quantity of shrubs and older trees purchased from nursery firms, which were also planted. These should make a great difference to the appearance of the place in a few years. Space for lawns, driveways and paths has also been provided. A plank walk has been constructed leading from the entrance gate to the School door.

The town council and Gleichen Agricultural Society co-operated in donating equal areas of ground to the School toward a four-rod roadway. This was graded by ourselves, and now forms a continuation of one of the residential streets of the town in leading up to our own gateway.

No new buildings have been constructed this year with the exception of a small portable colony house for the poultry. In order that our two-year boys would not be crowded at their mechanics' work the south end of the shop building, which was last year given over altogether for a livestock building, was this year partitioned off to enable both animal husbandry judging classes and carpentry to be carried on under the same roof. A livestock judging pavilion is urgently needed at this School. Its construction would then permit of expansion in both animal husbandry and mechanics' work, and in lieu of a gymnasium, would provide a place where some indoor physical recreation could take place.

EQUIPMENT

Equipment necessary for both class-room and summer use has been added to our initial stock from time to time. An exceedingly valuable addition for teaching purposes is a 1,000-watt lamp, Bausch and Lomb Balopticon. This machine may be used for either lantern slides or the projection of opaque objects such as photographs, illustrations, etc., upon a screen. It is in almost constant use and of great practical value.

Respectfully submitted,

G. B. BODMAN,
Principal.

Report of the Vermilion School of Agriculture

H. A. CRAIG,
Deputy Minister of Agriculture.

SIR,—I beg to submit herewith the annual report of the Vermilion School of Agriculture for the year 1921.

On account of the school having been closed for two years to regular classes, it has suffered more or less in regard to obtaining a large student body, but this year's classes would indicate that there is a revival of the desire in boys and girls to make use of the institution.

The work of the institution might be said to be divided into three branches, namely:

Teaching, investigation and extension work.

During the winter months, practically all the time is devoted to the teaching work, while in the summer the investigational work and extension branches is made use of to a very large extent in the teaching during the winter.

EXPERIMENTAL WORK

There are at this school approximately forty acres, that are being used for experimental purposes in agronomy work. Experiments are being conducted on the suitability of varieties of the different classes of grains, roots, hay grasses, and hay legumes. Extensive work is also being conducted in crop rotations, soil cultivation and moisture conservation, the last named being a very important phase of the work in that it is the aim to establish the methods that conserve and those that waste soil moisture. Experimental data are also being gathered in connection with the best methods of planting sunflowers, and in a short time valuable information will have been obtained about this valuable crop in this district. Work is also carried on, with different crops, for green feed and soiling purposes, and, although no absolutely definite figures are available yet, there is every reason to believe that this line of endeavour will bring to light some valuable information. On July 12th a very severe hail storm passed over the plots and ruined about seventy-five per cent. of the crop, thus causing us to lose a year's time with certain experiments.

TEACHING

As previously mentioned, the teaching in the school takes up all the time during the winter. It is taken up in several departments, each of which has a specialist in the work at the head. The boys study: Animal Husbandry, Field Husbandry, Dairying, Farm Mechanics, Horticulture, Bacteriology, English and Mathematics, Chem-

istry, Physics, Botany, Entomology, Civics, Veterinary Science, Soils, Farm Management and Poultry. The girls study all the branches of household economics such as Sewing, Cooking, Household Administration, Laundry, and Home Nursing, as well as Horticulture, Bacteriology, Poultry, English, Mathematics, Civics and Chemistry. In each subject the latest and most approved methods and information are taught, and by this means the student is always made acquainted with the latest information in his or her line of work.

EXTENSION WORK

The greater part of this work last year took the form of directing operations, in certain localities, in fighting grasshoppers. During the months of June and July a member of the staff was kept busy working out from the school, while another was looking after the supply department in Edmonton. The greater part of the activities of the staff member working from the school, were to the south along the Canadian Pacific Railway running through Provost and Czar. Other districts visited were Loughheed, Sedgewick, Chauvin and Neutral Hills.

During the early part of the year, staff members attended meetings of farmers' organizations, and delivered addresses on various subjects of importance. One case of reported poisoning of livestock on the pasture was investigated, but no poisonous weeds were found.

Large numbers of letters are received annually requesting information along some particular line. Numbers of telephone enquiries are also received, which all add to the fact that the school would be missed very much, were it not here. Besides the letters and telephone calls we have a good many personal interviews with farmers. Our bulletin service is also used freely.

Besides the outside extension, we have a service branch at the school, that is used quite extensively in the way of seed germinating work. Although not equipped to handle many samples at a time, one man is kept busy with the work as spring approaches, and about thirteen hundred samples were tested during the year.

THE FARM

The work on the farm is carried on in such a way as to provide grain and roughage for the large stock that is necessarily carried at an institution of this kind. During the last summer, the farm grain crops suffered from the same hail storm as did the plots, and, as a result, the grain threshed was rather low in quantity; the growth of the grain crops after the storm was marvellous, and there were large quantities of green feed for winter use. An excellent crop of sunflowers last summer was put into the silo in good shape, and is providing excellent succulent feed this winter for the cattle. A small acreage of corn right alongside of the sunflowers did not do well, and was a good object lesson in the possibilities of the sunflower as a silage crop in this district. A field of fall rye went into the winter in fine shape, and gives evidence of a good crop in 1922.

LIVE STOCK

It is the aim of the department to establish at this school a herd of milking Shorthorn cattle, and two things have helped a great deal. First, the use for some time of an outstanding dairy Shorthorn sire, whose transmitting qualities are now being seen. Second, the addition of seven pure-bred females and two pure-bred males from the districts in England famous for dairy Shorthorn cattle. One would travel many miles before finding a better herd of this particular type of cattle.

There is also a small, but choice, flock of Oxford Down sheep maintained here, and judging by the number of requests for male animals of breeding age, the flock is making an impression in the neighborhood. Our stock of pigs of the Berkshire breed is rather low, but we anticipate an increase in numbers which will greatly facilitate class-room work. While the horses are not kept for show purposes, they are good specimens of the Clydesdale and Percheron breeds and are extremely useful in demonstrating breed type to the students. Our poultry was increased very materially during the past year, and we now have a flock of White Wyandottes of which we are justly proud. There are also some representatives of some of the other utility breeds.

HORTICULTURE

There is at the school a small but productive fruit garden, made up of red and white raspberries, red, white and black currants, gooseberries and strawberries. All except the gooseberries did well the past season, and the failure of the gooseberries might be attributed to unsuitable varieties. The vegetable garden was a success this past year, and many vegetables were produced for use in the domestic science work. Each year sees additions to the shrubs and trees at the school and we are now beginning to get some results from the previous work. Carranganas and Manitoba Maple do well, and we have a good showing at the school here.

METEOROLOGICAL REPORT

There were several dry spells during the last summer that looked as though the crops were going to suffer a great deal more than they did. One spell during June was quite prolonged and made the people rather doubtful as to the results. The following table gives the precipitation by months for the year:

	Snow	Rain
January	4.0	.....
February	10.5	Slight
March	2.8	.....
April	5.0	0.09
May	Flurries	2.23
June . . . . .	.....	1.68
July . . . . .	.....	4.26
August . . . . .	.....	2.97
September . . . . .	.....	1.49
October . . . . .	.....	0.11
November	3.62	.....
December	.75	.....
	26.67	12.85

Total precipitation at V.S.A. (10" snow=1" rain)=15.52".

SCHOOL FAIR WORK

During the year forty-five School Fairs were directly or indirectly directed by this School. These fairs were divided into three circuits, one for the Vermilion District, one for the Sedgewick District, and one for the Edmonton and Peace River Districts. Four thousand one hundred and seventeen pupils applied for and received seeds, but due to climatic conditions in some localities, principally drought and hail, all pupils receiving seed were not able to exhibit. School Fairs are a success, and great interest is manifested by both young and old. Following is a list of the places and dates where School Fairs were held:

Date	Circuit 1	Circuit 2	Circuit 3
September 2nd	Islay	Sunnyside	Provost Czar Amisk Battle Bend Alliance Killam Hardisty Sedgewick
September 3rd	Round Hill		
September 5th	..Paradise Valley		
September 6th	Kitscoty		
September 9th	Ryley		
September 12th	Bellis		
September 13th	Ashmont		
September 14th	....		
September 15th	Vegreville		
September 16th	Vermilion		
September 17th		Spruce Grove	Lougheed Strome Bawlf
September 19th	Boian		
September 20th	Mannville	Smoky Lake	
September 21st	Myrnam		
September 22nd	Minburn		
September 23rd	Innisfree		
September 24th	St. Paul & St. Vincent	Waskatenau	
September 26th	Chauvin		
September 27th	Edgerton		
September 28th	..Wainwright		
September 29th	..Viking		
September 30th	..	Ellerslie Leduc Spirit River Clover Bar Grande Prairie High Prairie Waterhole	
September 30th	..		
September 24th	....		
September 20th	....		

BLACK-LEG VACCINE

During the past summer a large number of doses of vaccine was sold to people living in the neighborhood and nearly every one reports good satisfaction.

ATTENDANCE

The school opened on Oct. 27th with an enrolment of ten in the first year and two in the second. Due to the fine weather prevailing at the time of school opening it was not to be wondered at that there

were not more. When the colder weather set in, the students began coming in, and at Christmas there was a total of thirty-nine to write the examinations.

TEACHING STAFF

During the year several changes were made in the teaching staff, due to some members resigning to accept other positions. During the year a new farm manager, and a new principal were appointed to fill vacancies, and an exchange of locations brought a new English and mathematics teacher. A list of the staff and their subjects follows:

J. C. McBeath, B.S.A., Principal and Agronomist.
E. H. Buckingham, B.S.A., Farm Manager and Instructor in Animal Husbandry.
J. K. McKenzie, B.S.A., Instructor in Farm Mechanics.
N. C. Qua, M.A., Instructor in Science.
W. J. Moon, V.S., Instructor in Veterinary Science.
W. S. Benn, Instructor in English and Mathematics.
J. Thompson, Instructor in Dairying.
Miss H. M. Gowsell, Instructor in Household Science.
Miss A. P. Scott, Instructor in Household Science.
Miss Jean Crosbie, Instructor in Home Nursing.

During the year special lectures were given by Mr. A. E. Meyer, the Superintendent of Agricultural Schools at that time; Dr. Talbot, Provincial Veterinarian; and Mr. Moore, of the Cow Testing Branch of the Dominion Department of Agriculture.

Respectfully submitted,

J. C. McBEATH,
Principal.

Report of the Claresholm School of Agriculture

H. A. CRAIG,

Deputy Minister of Agriculture.

SIR,—I beg to submit the annual report of the Provincial School of Agriculture, Claresholm, Alberta, for the year 1921.

The boundaries of the territory served by the Claresholm School of Agriculture extend on the south along the northern edge of the Blood Indian Reserve to Lethbridge; on the east as far as Lake McGregor; on the north-east as far as a line drawn roughly from the northern end of Lake McGregor to Calgary; on the north the main line of the Canadian Pacific Railway running from Calgary to the mountains, and to the British Columbia boundary on the west.

On October 27th, 1921, the Provincial School of Agriculture commenced work with the following staff:

J. C. Hooper, M.A., Principal, Provincial Biologist, Instructor in Science.
G. B. Walker, B.S.A., Farm Manager, Instructor in Animal Husbandry.
C. T. Tapp, B.S.A., Instructor in Field Husbandry.
W. Lawler, Toronto Technical Institute, Instructor in Mechanics.
G. A. Richardson, B.Sc. (Agr.), Instructor in English and Mathematics.
Dr. C. E. Buchanan, V.S., Instructor in Veterinary Science.
E. E. Eisenhower, B.S.A., Instructor in Irrigation.
Miss Eleanor Allely, Instructor in Home Economics.
Miss Mary M. Hall, B.Sc., Instructor in Home Economics.
Miss Florence C. West, R.N., Instructor in Home Nursing.

The following special lecturers gave instruction at the school during the term:

Dr. P. R. Talbot, Provincial Veterinarian.
H. S. Pearson, Instructor in Dairying.
A. N. Macdonald, Instructor in Dairying.
L. Norgard, Instructor in Blacksmithing.
Miss Anna L. Fennell, R.N., Instructor in Home Nursing.

CLOSING EXERCISES IN THE SPRING OF 1921.

The opening address was given by Principal J. C. Hooper. This was followed by an address by Professor A. E. Ottewell, of the Extension Department of the University of Alberta, entitled "The Value of Education." The diplomas and prizes were presented by Professor Ottewell.

ENROLMENT IN THE SCHOOL IN THE FALL OF 1921

First Year girls	9
First Year boys	21
Second Year girls	1
Second Year boys	19

* TWO YEARS' INSTRUCTION

The course at the School of Agriculture, Claresholm, consists of two terms of five months each. The first term begins about the first of November and ends the last of March. Those students successfully passing the examinations at the end of the first year are allowed to enter the second year of the course. At the end of the second year a final examination is given. A diploma is given to those who pass this final examination. In addition to this all of those who, in the opinion of the examining board, are eligible are given entrance standing to the University of Alberta. The course in Agriculture at the University covers three years, and, if successfully concluded, commands the degree of Bachelor of Science of Agriculture. There is a similar arrangement for the Domestic Science students. Those students having a matriculation standing may complete the work at the School of Agriculture in one year.

The course in agriculture for boys, sixteen years and over, contains the following subjects:

List of subjects for first-year boys:

Field Husbandry	Entomology
Animal Husbandry	Elementary Chemistry
Veterinary Science	General Physics
Farm Mechanics	Botany
Farm Dairying	Farm Management
Poultry	English
Horticulture	Mathematics
Vegetable Gardening, Floriculture	Farm Book-keeping

List of subjects for second-year boys:

Field Husbandry	Agricultural Physics
Animal Husbandry	Botany
Farm Mechanics	English
Farm Dairying	Mathematics
Poultry	Bacteriology
Horticulture	Farm Management
Small Fruits, Forestry	Rural Economics
Agricultural Chemistry	Civics
Veterinary Science	

The School of Agriculture is excellently equipped, enabling the instructors to teach in a practical way the various phases of each subject. All of the instruction given throughout the course has a direct bearing on the practical side of farming as carried on in Southern Alberta.

DEPARTMENT OF ANIMAL HUSBANDRY, POULTRY, FARM MANAGEMENT
AND FARM BOOK-KEEPING

In all animal husbandry work an endeavor is made to emphasize the practical side of the subject and to make it as useful as possible. First-year lecture work deals with the practical feeding, care and management of the common classes of livestock. The laboratory

periods are devoted to the judging of livestock with a view to fixing in the student's mind the desired type and conformation of animals for market and feeding purposes. With the second year the lecture work deals with the classification of the common breeds of farm animals and their characteristics. Lectures are also given dealing with the fundamentals of animal nutrition and breeding. In judging work, a study is made of breeding classes, and as far as possible, some breed characteristics. The new plan of the Department of Agriculture in having cars of stock shipped from school to school, enables the students to become more familiar with a greater number of breeds of livestock than they otherwise would.

In first-year Farm Management and Book-keeping, a study is made of factors contributing to successful farming. The practical work takes up the use of commercial paper and methods of keeping farm books and cost accounts. Second-year work continues on from this, taking up factors influencing cost of production, efficiency in farm work. Also a discussion of notes, contracts and other forms, including mortgages, is given.

In poultry study, the lectures deal with poultry management in regard to housing, feeding, breeding, rearing, and fattening. Practical periods are given in judging, identification, fattening and dressing of poultry. Second-year lecture work takes up the classification of poultry and poultry products, poultry nutrition, feeding, common diseases, their prevention and treatment.

This year about one hundred chickens were raised by means of the incubator and brooder. Of these, the best cockerels were sold for breeding purposes. The inferior ones were crate-fattened by the students. They were fed a ration of oats, 2, barley, 1, finely ground, the hulls sifted out and mixed into a wet mash with milk. The gains were one-quarter pound for each pound of original weight of the bird. The gains cost slightly over eighteen cents a pound gain. In addition to the gains being made profitably, a premium of five cents a pound was offered for chickens fattened in this way.

Forty females were selected from the pullets and hens. These were selected with a view to egg production, and during the first month of the new year averaged from fifteen to twenty-five eggs daily.

DEPARTMENT OF FIELD HUSBANDRY

The work of this department for the past year was conducted by Mr. O. McConkey along similar lines to those of former years, and may be considered under the following divisions: Instructional, Experimental Work and Extension Work.

Instruction:—This consists of lectures to the students during the winter months. The aim is to give a practical course in Soil Cultivation Farm Crops, Methods of Improvement, Fertilizers, Seed Selection, Rotation of Crops, Judging and Grading of Grains, with special emphasis laid on methods and varieties suitable for this district.

Experimental:—There are thirty-five acres of land connected with this school and used for experimental work. The following are some of the experiments carried on during 1921:

1. Variety tests:

Wheat, oats, barley, flax, rye, buckwheat, peas, millet, corn, sunflowers, grasses, clovers, potatoes and vegetable crops.

2. Soil investigation and crop rotation is another line of experiment in this division. We have under way about twenty-four crop rotations including such crops as wheat, oats, barley, rye, sunflowers, alfalfa, sweet clover and various grasses such as brome and western rye. The cultural methods deal with the depth of plowing, depth of seeding, rates and dates of seeding, spring vs. fall plowing, stubbling in vs. spring plowing, potato land for cereals, etc., harrowing of the growing crop vs. not harrowing, use of sub-surface and surface packer, use of different kinds of drills.

3. Hot beds and cold frames are operated each spring with quite satisfactory results.

Unfortunately a very severe hail storm on July 12th this year ruined our crops from an experimental standpoint.

Extension Work:

1. Seed germination tests for farmers.
2. Correspondence with farmers and others regarding crop production.
3. Outside lectures at Farmers' Institute Meetings.
4. Judging at Agricultural and School Fairs.
5. Personal visits and interviews with farmers regarding the problems at their farms.

AGRICULTURAL ENGINEERING

The Agricultural Engineering course embraces Carpentry (bench work and building construction), Blacksmithing, Gas Engines, Farm Machinery, Mechanical and Architectural Drawing. The work covered in each course is both technical and practical, placing the students, at the end of the second year's course, in a position to do practically all their own engineering work and repairing on the farm.

The first year in carpentering is spent in learning the proper use of all the tools through the construction of useful articles in the shop. The second year covers the practical construction of farm buildings, both by lectures and the constructing of sections of buildings.

The first year in forge work is spent in learning how to properly heat and draw out iron, how to weld, and how to make such articles as gate hooks, chain links, neck-yoke irons, welded rings, etc.

The second year's work covers the making of tools from steel, such as cold chisels, punches, wrecking claw bar, etc., the preparation of horse-shoes, plowshare work, babbitting, soldering, and pipe-fitting.

The gas engine course, taken in the first year only, covers in lectures, the principles and theory and in the practical work, the care, operation, and overhauling of tractors. The laboratory work covers the repair and operation of the different magnetos.

Farm machinery is taken in the first year only, and includes lectures and practical work on the different machines used on the farm.

The mechanical and architectural drafting course (which covers the drawing of working plans of shop projects, the drafting, tracing and blue printing of farm buildings) is taken up in the second year.

During the summer of 1921, model silos were built. These are to be used in class work during the winter months.

A grasshopper poison bait mixer was built for the Claresholm centre.

SEED RYE RELIEF WORK

During the latter part of the summer, the engineer was engaged on seed rye relief work. Approximately one hundred and forty-five farmers were supplied with seed rye in quantities ranging from ten to fifty bushels.

DEPARTMENT OF PROVINCIAL BIOLOGIST

Bacteriology.—The course in bacteriology with the second-year boys and girls is made to apply as far as possible to Agriculture and Household Science. The study of bacteria in relation to each of the following is taught: air, water, milk, butter, cheese, soils, preservation of foods, vinegar-making and micro-organism in bread-making.

Culture Work.—During April, May and June cultures for the inoculation of legume seed were grown at the School of Agriculture, Claresholm, and supplied to farmers of Alberta, British Columbia and Saskatchewan. The following is a statement of those sent out during the year 1921:

Alfalfa	487
Sweet Clover	407
Field Peas	150
Alsike	14
Red Clover	85
White Dutch Clover	10
Beans	16
Sweet Peas	19
	1,188

Entomology.—This subject is taught to the boys of the first year only. They study elementary entomology, dealing with the place that insects occupy in the animal kingdom, their near relations, parts of the body, circulatory, respiratory and digestive systems and economic orders. A study is made of the life history and important economic forms such as: Grasshoppers, cutworms, sugar beet webworms, beetles, flies, moths, etc. The various methods of control and insecticides are fully discussed.

EXTENSION WORK IN ENTOMOLOGY

During the summer considerable time was spent fighting the outbreaks of grasshoppers, cutworms, wireworms and sugar beet webworms.

The grasshopper outbreak was much more serious in 1921 in the territory served by the Claresholm School of Agriculture than it was in the preceding year. Community action to combat the grasshoppers was urged. Meetings were addressed throughout the territory by representatives from the School and information was given concerning grasshoppers and their control. Circulars prepared by the Department of Agriculture of Alberta entitled, "Control of Grasshoppers in Alberta," "Grasshopper Poison Bait Mixer," were sent out from the School of Agriculture to the secretaries of the various municipalities, secretaries of U. F. A. locals, and to all individuals who inquired.

Municipalities were urged to establish mixing stations at convenient places and there prepare the poison bait. Ingredients for making the poison bait were sold directly from the Claresholm School of Agriculture; the School ordered, also, quantities to be shipped directly by the Provincial agents at Calgary and Lethbridge to the various mixing stations. The quantities sold directly from the School were: Molasses, 42 barrels; arsenic, 5,842 pounds; bran, 42 tons. The quantities ordered from Calgary and Lethbridge were: Molasses, 417 barrels; arsenic, 25,120 pounds; bran, 94 tons.

The results of the poisoning were satisfactory wherever it was carried out according to the instructions given. The most satisfactory results were obtained on organized territory where the municipalities organized poison bait mixing stations, and where community action was carried out. On unorganized territory, however, less poisoning was done and the damage consequently was more serious.

The work of poisoning was discontinued as soon as the farmers saw that their crops were being seriously affected by the continued drought.

According to the number of eggs found to the square foot in the fall of 1921, it is likely that the grasshopper problem will be very serious in 1922.

EXPERIMENTAL WORK

During the summer experiments were carried on with insecticides for potato beetles, Western blister beetles, red-backed turnip beetles, cottonwood sawflies, aspen leaf rollers, cutworms and aphids.

Insect collections were made and the life histories of several insects were worked upon.

Botany.—The subject is taught to the first and second-year boys. The more elementary phases are taught to the first-year boys, including seed germination and controlling influences, vegetative parts of a plant, parts of a flower and uses of each, weeds and weed-seeds and important economic orders of plants.

The second-year boys are taught the morphology of the various tissues, necessary elements, plant breeding, rusts, smuts, blights and the various fungicides.

EXPERIMENTAL WORK IN BOTANY

During the summer of 1921, collections of plants, weeds and weed-seeds were made. Different methods of preserving plants were used. The alum bath—two ounces of white alum to one gallon of water—proved the best for preserving the natural colors of flowers, leaves and stems.

HORTICULTURE

This subject is taught to the boys and girls, and is made to apply as far as possible to the farm home. The hardy trees and shrubs for wind-breaks are recommended. Instructions in the raising of hardy trees from seed and cuttings are given. The beautifying of the farm home by the planting of wind-breaks, ornamental trees and shrubs, making of a lawn and the planting of annual and perennial flowers is fully discussed. Experimental plot work was carried on in the raising of hardy trees and shrubs from seed and from cuttings, and the raising of perennial flowers from seed.

VETERINARY SCIENCE

In the course of lectures in veterinary science, it is the aim of the instructor to help the students to grasp a broader and more accurate idea of the anatomical structure of the animal body, and the normal physiological functions of the various organs, the proper care, and the application of such simple remedies as are beneficial to help maintain the animal body in the normal healthy condition, thus preventing developing of serious complaints, and their even more serious complications.

Lectures on Contagious Diseases are also given periodically by Dr. P. R. Talbot, Provincial Veterinarian.

ENGLISH

The course in English Composition and Literature has adhered closely to that outlined in the Calendar for the year. In English Literature, the works prescribed have been treated as thoroughly as time permitted, especial attention being paid to the character of the writings, and their relation to the thoughts, customs and habits of the

people and other writers of the time. In this way the instructor hoped to eliminate the lack of interest often found in the study of English, due to undue stress being laid on the historical outline and grammatical structures; and to make this study pleasing and helpful.

English composition has been linked as far as possible to the study of English Literature, especially with regard to the style of writing. In all essay work, as well as in public speaking and debating, subjects were chosen which made newspaper and magazine reading a necessity and encouraged a familiarity with current events. Literary work has been linked up with the social life of the school, especially with regard to public speeches, debates and readings.

FARM MATHEMATICS

The course in Mathematics reviews the simple process of Arithmetic and deals with mensuration and commercial arithmetic. Special attention is given to the practical problems of the farm and home which arise in farm and household experience. Every opportunity to convert each stage of the work into one of practical value has been acted upon.

PHYSICAL SCIENCE

This subject has of necessity been treated in a rather elementary manner, the time being devoted largely to the principles underlying this broad subject. In the laboratory periods experiments were arranged with the object not only of helping the student to become acquainted with the practical side of the course, but also of imbuing him with the need for accuracy and attention to minutest details in this branch of science.

GIRLS

Course in Household Science for girls sixteen years and over consists of two terms of five months each.

LIST OF FIRST YEAR SUBJECTS

Cooking	Sanitation
Foods	English
Physiology and Anatomy	Mathematics
Home Nursing	Horticulture
Sewing	Home Dairying
Textiles	Poultry
Embroidery	Elementary Chemistry
Laundry	Civics
Household Administration	Physical Culture

LIST OF SECOND YEAR SUBJECTS

Cooking	English
Dietetics	Mathematics
Hygiene	Horticulture
Home Nursing	Home Dairying
Sewing	Poultry
Textiles	Bacteriology
Household Administration	Household Chemistry
Home Book-keeping	Physical Culture

HOUSEHOLD SCIENCE

Instruction.—The aim of this course is to give the young women an efficient training in practical home-making. Not only is the practical side developed, but sufficient theory is given to lend interest and meaning to the work.

COOKING

The work in cooking consists of actual practice-work rendered intelligible by lectures concerning the theory of the subject. It comprises the planning, preparation and serving of meals, the marketing and storage of foods and the detailed study of food values both in health and disease.

DIETETICS

A most practical course covering a study of the food elements, their digestion and fuel value, the energy and mineral requirements of the body, planning of family dietaries, the study of vitamins, deficiency, diseases and special diets in sickness and health, is given.

HOUSEHOLD ADMINISTRATION

Closely related to this is the study of Household Administration which covers subjects of vital importance to the homemaker; such as cleaning processes, house sanitation, home book-keeping, as well as general ideas on house planning and decoration. Here, too, the students gain knowledge by the most impressive methods, that of carrying out the operation under discussion. During the summer months instructions were given at some of the school fair centres, regarding the cooking and sewing exhibits for the school fairs.

HOUSE DECORATION

The course in house decoration covers work in house planning, consideration being given to practical homes for Alberta. House furnishings with reference to furniture, draperies, floor coverings and wall treatments and accessories.

A short history of furniture is also included, and an outline of domestic and oriental rugs.

A note book is required of each second-year student, the furnishing of a five-room bungalow on a limited sum.

SEWING AND TEXTILES

The practical work in the first year covers instruction in the fundamental stitches; seams, plackets, methods of putting on lace, embroidery, and flounces, buttonholes, patching and darning. A complete set of underwear embodying the above principles, a blouse and a dress of wash material, gingham, etc., is required of each student.

Simple embroidery stitches with a practical application in two finished articles is also required of the first year. The textile work includes a study of fibres; silk, wool, linen and cotton.

In the second year, emphasis is laid on tailored stitches, seams and finishes. Each student completes a tailored blouse, and skirt. A make-over problem is considered and the graduation dress is made in class.

The textile work includes a course in Costume Design—a study of proportion, line, color and texture, a notebook from each student illustrating various principles. The ethics of dress, the planning of an economical wardrobe and a clothing budget, the economics of dress and the hygiene of clothing are covered in the second year.

TEXTILE CHEMISTRY

A study of the present status of textiles, adulteration and substitutes in materials on the market, chemical tests for determining mixtures, a study of textile laws, bleaching, blueing and dyeing of various fabrics, is carried on.

LAUNDRY

This follows work on textiles, giving practical laundering of all the fabrics in the most satisfactory way, removing of stains, methods of dry cleaning, soap-making, pressing and cleaning suits, small family wash and equipping the home laundry.

During the summer months instructions were given at some of the school fair centres regarding the sewing and cooking exhibits for the school fairs.

ANATOMY AND PHYSIOLOGY

These two important subjects are discussed in lectures and illustrated by life-size anatomical charts. The systems of the human body and the organs composing each are dealt with from the point of view

of position, function and hygiene. These subjects are closely correlated with and make clear many points under discussion in Foods, Dietetics and theoretical cooking.

PERSONAL HYGIENE

The aim of this subject is to set forth plainly the best means of developing and maintaining physical vigor. The initial lectures are devoted to a concise discussion of the anatomy and physiology of the parts under consideration, upon which is based the subjoined advice.

HOME NURSING

This work, taught by lectures and demonstrations, enables the students to gain knowledge of this important study and to give them simple instruction in practical ways to assist the doctor in all kinds of illness in the home when a trained nurse is not available. The demonstrations consist of: Bed-making, and changing linen in all cases; preparation of fracture bed; taking of temperature, pulse and respiration; method of making and applying poultices, fomentations, etc.; bandaging, including the use of the roller and triangle bandages, slings, etc.; practical treatment for common emergencies.

Lectures on the following: Preparation of sick room; care of patient, bathing and sponging, administration of cold and hot packs; giving medicines; charting; theory of treating emergencies, obstetrical nursing and care of the infant; infectious and contagious diseases and disinfection.

SCHOOL FAIR WORK

The objects of school fairs may be briefly summarized as follows:

1. To stimulate in the children an interest in the activities of the farm and home.
2. To increase their knowledge of the principles and practice of farming and homemaking.
3. To encourage the teaching of agriculture and home economics in the rural schools.
4. To increase the interest of parents in the work of the school.
5. To raise the standard of work done by the pupils in all departments of the school.

METHODS OF CONDUCTING FAIRS

School fairs are conducted as co-operative enterprises between government agencies and committees of local people. The government agents concerned with the fairs are the Provincial Schools of Agriculture, the Agricultural Representatives, the School Inspectors and the Department of Education. The local committees vary in composition; usually every school participating in the fair is represented.

Seeds are distributed to the children of a selected group of schools. The children plant these seeds at home, care for their gardens during the summer, and in the autumn exhibit the products at a Fair held at a central point. In addition to those for garden products, classes are open for live stock, grains, cooking, sewing and school fair work.

The School of Agriculture supplied the seeds, instructional circulars, mounting materials for plants and insect collections, entry tags, prize tags; a grant of two-thirds of the live-stock awards is given by the Department of Agriculture. Assistance was given in the organizing of the various school fair centres by Mr. G. A. Richardson, of the Claresholm School of Agriculture. The central executives and the various schools of each centre were visited by Mr. Richardson, and Miss I. E. Allely, and lectures were given to help and to stimulate interest in the work. Judges at the School Fairs were supplied by the School of Agriculture.

In the territory represented by the Claresholm School of Agriculture, sixteen School Fair centres were organized. Eleven of these carried the work to a successful end. Five, however, owing to failure of crops, became discouraged and decided not to hold a fair. Each of these centres assured us that next year it would do its best to have a successful fair.

The following is a tabulation showing points at which School Fairs were held, together with the date of each:

Fair Centre.	Date of Fair 1921	No. of Schools entering	No. of Pupils receiving seed.	No. of Exhibits estimated
High River	Sept. 12	8	193	250
Cowley	Sept. 16	9	118	400
Granum	Sept. 19	8	207	350
Claresholm	Sept. 20	14	330	700
Macleod	Sept. 21	17	224	325
Stavely	Sept. 21	8	133	400
Cayley	Sept. 23	5	82	350
Okotoks	Sept. 28	6	149	300
Pincher Creek . .	Sept. 28	14	252	450
Queenstown	Sept. 30	12	225	900
Vulcan	Oct. 6	16	288	300

The Department of Agriculture gives a grant of two-thirds of the livestock awards. The following is a list of the livestock grants to the various centres:

High River	
Cowley	\$35 33
Granum	21.67
Claresholm	44 34
Macleod	
Stavely	22.67
Cayley	16.80
Okotoks	31 00
Pincher Creek	33.00
Queenstown	72 66
Vulcan	12 73

The Department of Agriculture gives a diploma, each year, to the school having the best exhibit in all classes, according to enrolment, at each fair.

The following is a list of the winning schools at the various centres:

Name of Centre	Name of School	Name of Teacher
High River	Class room 2 . . .	Mrs. Treacy
Cowley	Lundbreck . . .	Miss Wallace
Granum	Granum . . .	G. A. Bishop
Claresholm	Greenbank . . .	Miss Currie
Macleod	Allenfields . . .	Mr. Pearson
Stavely	Balfour . . .	Miss N. B. Stegg
Cayley	Not decided . . .	
Okotoks	Allan . . .	Miss L. Riches
Pincher Creek	Halifax	Miss V. Levasseur
Queenstown	Berrywater . . .	Miss Pickard
Vulcan	Thigh Hill . . .	Mrs. M. Todd

GENERAL REMARKS ON SCHOOL FAIRS

The exhibits were good in most cases. A keen interest was shown by the pupils and their parents in all branches of the fair. Special mention should be made of the large number of exhibits and the attendance of the fairs at Queenstown and Claresholm. The School Fairs give the teachers of the School of Agriculture a splendid opportunity of meeting the school children and their parents and in so doing were able to talk over the various problems which confronted the farmers of each particular district.

WEATHER OBSERVATIONS TAKEN AT CLARESHOLM IN 1921.

Month	Temperature		Total precipitation in inches of rain.
	Maximum	Minimum	
January	52.0	-13.0	.60
February	56.0	-7.0	.60
March	54.0	-28.0	1.60
April	64.5	14.0	.27
May	82.0	24.0	1.14
June	85.5	35.0	.57
July	96.0	37.0	3.38
August	86.0	39.0	1.00
September	76.0	27.0	1.35
October	80.0	28.0	.18
November	66.0	-31.0	1.06
December	58.0	-25.0	.21
Total			11.96

EVAPORATION FROM FREE WATER SURFACE AT CLARESHOLM DURING 1921.

For the week ending May 13...	1 11 inches
For the week ending May 20...	1 01 inches
For the week ending May 27...	1 26 inches
For the week ending June 3...	1 06 inches
For the week ending June 10...	1 41 inches
For the week ending June 17...	1 44 inches
For the week ending June 24...	1 57 inches
For the week ending July 1...	2 08 inches
For the week ending July 8...	1 80 inches
For the week ending July 15...	1 74 inches
For the week ending July 22...	1 94 inches
For the week ending July 29...	1 55 inches
For the week ending Aug. 5...	1 50 inches
For the week ending Aug. 12...	1 32 inches
For the week ending Aug. 19...	1 22 inches
For the week ending Aug. 26...	1 25 inches
For the week ending Sept. 2...	1 75 inches
For the week ending Sept. 9...	88 inches
For the week ending Sept. 16...	1 00 inches
For the week ending Sept. 23...	1 00 inches
For the week ending Sept. 30...	1 10 inches
For the week ending Oct. 7...	78 inches

BLACKLEG AGGRESSIN

The Claresholm School of Agriculture sold, during the year 1921, five hundred and eighty-five doses of blackleg aggressin at fifteen cents a dose; also five syringes at two dollars each.

YEAR BOOK

In the spring of 1921 the students of the Claresholm School of Agriculture published a year book. This year book illustrated the various kinds of classroom work, and outlined the functions and accomplishments of the organizations of the student body during the school year.

STUDENTS' ORGANIZATIONS

Students' Council—The duty of this council is to co-operate with the staff in maintaining discipline among the members of the student body.

Athletic Society.—This is a very energetic society whose duty it is to provide healthful sports for the students. Football, basketball and hockey are played by almost all the boys, while basketball and hockey are enjoyed by the girls. There is a good open air rink on the school grounds.

Literary Society.—The duty of this society is to provide entertainment for the students at the weekly literary meetings held each Saturday night. This entertainment takes the form of debates, public speeches, musical selections and dancing. Addresses and illustrated lectures are given by members of the staff and prominent speakers of Claresholm.

Y. M. C. A.—This society is a joint society of the Y. M. C. A. and the Y. W. C. A. Public meetings are held in the Auditorium of the School of Agriculture each Sunday afternoon. Addresses are given by clergymen, Y. M. C. A. officials and others. After the address the students break off into Bible study discussion groups. This society performs a vital service in the lives of the students.

Respectfully submitted,

J. C. HOOPER,
Principal.

Report of the Youngstown School of Agriculture

H. A. CRAIG,
Deputy Minister of Agriculture.

SIR,—I beg to submit herewith the annual report of the Youngstown School of Agriculture for the year 1921.

The following are the present staff of the School:

R. M. Scott, B.A., Principal and Instructor in English and Mathematics.
J. A. Cuthbertson, B.S.A., Farm Manager and Instructor in Animal Husbandry.
B. J. Whitbread, B.S.A., Instructor in Agronomy.
P. Clayton Stanford, B.S.A., Instructor in Science.
T. C. Talbot, Instructor in Mechanics.
Mary N. Scott, Instructor in Home Economics.
Dr. J. P. Kerr, Instructor in Veterinary Science.

The following special lecturers gave instruction at the School during the term:—

Jean Crosbie, R.N., Home Nursing.
Dr. P. C. Talbot, Veterinary Science.

During the term N. S. Anderson, who had been Farm Manager, severed his connection with the School, his place being taken by J. C. McBeath, who had been teaching Science. Later, when Mr. McBeath was transferred to Vermilion, being appointed principal at that School, Miss P. Clayton Stanford was appointed Science Instructor, while J. A. Cuthbertson was appointed Farm Manager.

ENROLMENT

The enrolment in the School for the winter term of 1921-22 was as follows:

First-year boys	21
Second-year boys	9
First-year girls	9
Second-year girls	2

Owing to the extreme dry season with its consequent partial crop failure, coupled with the fact that prices for farm produce declined so rapidly in the fall of the year, our attendance was practically cut in two. The fall in price of wheat, especially, made it impossible for many to attend. We were practically assured of a seventy-five per cent. increase on our present number had the slump in prices not occurred.

The academic standing of the above students ranges from Grade IV. in the public school to Grade XI. in the high school. Our students number forty-one in all, of which sixty-one per cent., or

twenty-five, have reached Grade VIII. or over, the remaining thirty-nine per cent., or sixteen, falling below that standing. The ages of the students range from sixteen to thirty-five years, the average age among the men being nineteen years and among the girls eighteen years.

CHARACTERISTICS OF THE COURSE

The course given at the School of Agriculture is a two-year course running five months each year, namely, from the 1st of November until the 1st of March. Students must pass the first-year examinations successfully to enter the second term the next year. Students successful the second term are granted a diploma. Such students, upon receiving the recommendation of the examining board, are entitled to entrance to the College of Agriculture at Edmonton. Similar conditions exist for Home Economics students.

The course is as practical as possible, and yet has sufficient theory to make it very valuable. All departments are very well equipped considering the short length of time this School has been in operation. We look forward with satisfaction to the possibility of greater service the older we get. Each year the information gained from experimental work, and the experience gained from the past year's teaching adds to the value of the course for the students. Instruction is given in the following subjects: Soils and soil cultivation, feeding and care of live stock, judging and grading of seed grain, carpentry, blacksmithing, farm machinery, dairying, poultry, veterinary science, horticulture, bacteriology, botany, entomology, chemistry, physics, English and mathematics.

In Home Economics, the course is essentially a home-makers' course, designed to make the girls efficient and capable women in the home, but still with its share of theory, which is indispensable in a course of this nature. Among the subjects taught in this course are the following: Cooking, foods and dietetics, home nursing, sewing, laundry, sanitation, dairying, poultry and household administration.

There are no entrance requirements for students coming to the School, which factor has a mighty influence for further education among those who were denied the common grounding of a public school education. At the School they are encouraged to take part in all the student activities, social events, sports, public speaking, etc., as well as to show efficiency in the class work. Our object is to turn out as good a citizen as possible, as broad-minded a citizen as possible and as keen a student of farm problems as possible.

EXPERIMENTAL WORK

About thirty-five acres of land were set aside in the spring and used for experimental work. This work included experiments with crop rotations, manuring, summer-fallow versus intertilled crops, cultural methods, grasses, clovers, alfalfas, sunflowers, corn, peas, potatoes,

varieties of all cereals, rates, dates and depths of seeding, etc. A full outline and report of this experimental work will no doubt appear elsewhere in the Departmental report.

About 13,000 cuttings and seedlings of Russian Poplar, Manitoba Maple, Caragana and Willows were put out on the School grounds this spring of which about ninety per cent. have grown, and done well. Considerable grading and levelling had to be done, and the grounds laid out, so that we are only now in shape to carry on with any decorative work.

VACCINE

A quantity of germ-free black-leg vaccine is kept on hand at the School for sale to those in need of it. The charge for this is fifteen cents a dose. There is very little call for it in this district.

METEOROLOGICAL RECORDS

Meteorological data is collected here as at the other Schools in the province. The daily maximum and minimum temperatures and the rainfall are recorded as well as the evaporation from a free water surface. This station does not possess a wind or sun gauge, nor a wet and dry bulb thermometer.

The following table shows the monthly precipitation during 1921:

January	Missing
February	Missing
March	Missing
April	2.08 inches
May	1.70 inches
June	1.47 inches
July	3.71 inches
August	1.56 inches
September	1.02 inches
October	.00 inches
November	.50 inches*
December	.17 inches*
Total	12.21 inches
*Estimated.	

Evaporation from free water surface:

May 15th to 31st	2.88 inches
June	6.07 inches
July	6.52 inches
August	5.47 inches
September	5.00 inches
Total	25.94 inches

The following table will give some idea of the range of temperature at this point throughout the months of the year 1921:

Month	Maximum	Minimum	Mean Temp.
January	...	...	...
February	42.5	-23	18.7
March	47.5	-26	15.5
April	63	10	36.4
May	82	29	47.2
June	90	39	63.5
July	104	42	65.1
August	95	41	62.6
September	83	27	49.6
October	82	23	46.1
November	64	-23	15.5
December	59	-32	12.5

EXTENSION WORK

SHORT COURSE

On March 1, 2, 3 and 4, a very successful Farmers' Short Course was held at the School. Lectures and stock judging classes of special interest to farmers were put on. Judging classes in draft horses, beef and dairy cattle and sheep were held. Lectures in veterinary science, cereal crops, forage crops, soils, gas engines, etc., were given. Demonstrations by several makes of small tractors were put on also.

Several lecturers from the Department of Agriculture assisted with the work, among whom were Alex. Galbraith, Superintendent of Fairs and Institutes; Dr. Talbot, Provincial Veterinarian; A. E. Meyer, Superintendent Schools of Agriculture, and F. S. Grisdale, Principal, Olds School of Agriculture.

FAIRS AND INSTITUTES

Judges were supplied from this School for the Chinook, Oyen, Pandora and Youngstown Agricultural Fairs. Speakers were supplied for Farmers' Institute meetings at Delia, Oyen and Youngstown, also for the Women's Institute meetings at Sibbald. Judges were also supplied for the Oyen Seed Fair and Poultry Show and for the Munson Seed Fair.

SCHOOL FAIRS

All school fair work in the district covered by this School was taken over by the School this year with the exception of Castor, which was still held in co-operation with the School at Olds. In all ten fairs were held, and at the following places:

Fairacres.	September 6th
Rowley	September 12th
Verdant Valley	September 13th
Monitor	September 15th
Consort	September 16th
Castor	September 21st
Acadia Valley	September 24th
Youngstown	September 27th
Sibbald	September 29th
Chinook	September 30th

Three new fairs were started this year, one at Rowley, one at Verdant Valley and one at Sibbald. At each of these marked enthusiasm was shown and splendid results obtained, which argues well for the future welfare of the fairs at these places.

Of the older school fairs, Castor, Chinook, Consort, and Youngstown held their third annual fair this year, while Monitor, Fairacres and Acadia Valley held their second anniversary. No better comment could be made than to say, that with one exception these fairs were much superior to last year's exhibition, the attendance larger, exhibits of better quality and greater enthusiasm shown throughout.

Some figures on the number of exhibits and pupils may be interesting. In the ten fairs combined, a grand total of 1,925 pupils participated, and 114 schools took part, with a combined number of entries close to 8,000. Of these, Castor, the largest in the district (and probably in the province) had a total of over 1,600 entries from 412 pupils and 26 schools. Considering that three of these fairs were a first attempt, while none of the others are more than three years old, there is no doubt about the popularity of the school fair, and the enthusiasm behind it, with the resultant belief that the fairs will grow and prosper accordingly with the return of favorable conditions in the districts concerned.

While the results obtained this year are not as gratifying as they might have been with favorable crop conditions, yet the fact that they were as pleasing as they were does not dim in the least the future prospects. Even this year, School Fairs gave ample returns for the money invested. They have promoted interest and ability and progress, as well as loyalty to home and community. They gave an opportunity to compare the best pupils could do with the best of pupils of other districts. The value of personal effort as well as team work is emphasized, and the spirit and enthusiasm created with its accompanying incentive for "better results next year" goes far towards success. New ideas and new methods were exchanged, and the best results and how obtained were carried home to be put in operation another time, for without any doubt the quality and type of exhibits, especially in the agricultural lines, are improving yearly. The boys and girls are fast gaining the ideas which are necessary to enable them to pick out the best stock or to select the best grain for exhibition at these fairs.

GRASSHOPPER CONTROL

Each School of Agriculture was entrusted with the task of supplying information and personal aid, as far as possible, to those farmers in need of such in the territory tributary to the School.

Loss from grasshoppers was experienced in many parts of this district this year, the chief sufferers being in the Munson, Mecheche and Morrin districts. Around Pollockville, Wardlow, and Hutton some damage was done. South of Hanna, in the Hand Hills municipality, a little damage was experienced. The same is true of a district north of Oyen, lying towards Monitor, and also in the vicinity of Veteran and south of the town of Chinook. Meetings for the purpose of giving information on grasshopper control were held by a representative of the School at Munson, Morrin, Rumsey, Rowley, Pollockville, Wardlow, Hutton, Monitor and Veteran, while considerable time was spent in all these districts and others demonstrating methods of mixing poisoned bait and how best to apply it. Always the municipal districts shouldered the burden and purchased the supplies needed.

In every case, splendid success was experienced with the standard mixture. Supplies were kept at and distributed from the School, or ordered from the supply depot in Calgary. The prospects for the coming year are grave, as this pest has put in an appearance in almost every portion of this district this fall.

Respectfully submitted,

R. M. SCOTT,
Principal.

Report of the Alberta Natural History Society

H. A. CRAIG,
Deputy Minister of Agriculture.

SIR:—The executive of the Alberta Natural History Society is pleased to be able to report a large increase in the number of enquiries respecting natural history subjects during 1921. It has been the most notable feature of the year's work, and is gratifying evidence of the keener interest which is being taken by the people of the province in their natural environment. This is particularly true of the rural districts, a large proportion of our correspondence having been with country points. Country school teachers, members of U. F. A. locals and others similarly situated are realizing the pleasure and profit to be derived from a knowledge of the life histories of our native fauna and flora.

The aim of this society is the encouragement of the spirit of observation and enquiry, and any assistance or information it can give is gladly offered to individuals or organizations who are interested.

Our National Natural History Magazine, "The Canadian Field Naturalist," offers to all students of nature a means of keeping in touch with modern scientific investigation along Natural History lines. Among the contributors to its pages are some of the highest authorities in the Dominion. The magazine is published at Ottawa at \$1.50 per year. Subscriptions may be forwarded to Mr. C. B. Hutchings, Entomological Branch, Dept. of Agriculture, Ottawa. We heartily commend it to all lovers of nature. Some interesting notes on the Hudsonian Chickadee appeared in a recent number from the pen of Mrs. W. A. Cassels. The distribution of this species is very imperfectly understood.

Some notes of interest regarding insect pests have been forwarded by Mrs. G. F. Root, one of our members residing at Wetaskiwin.

(1) The balm trees of the district were greatly infested by the Polar Midrib Gall. Specimens were sent to the Entomological Branch at Ottawa, and it was learned that the insect was not likely to work any injurious effect upon the trees.

(2) Many spruce trees were defoliated by the Saw Fly larva, but most of the trees affected put out new foliage later.

(3) The Currant Aphis was widely distributed, and also plant lice on wild fruits, such as the Choke Cherry.

(4) The willows were affected with a bright orange fungus, *Melampsora Vigelorvii*, which defoliated the young trees.

On the annual Field Day, a large number of botanical specimens were collected, amongst which were ten specimens which had not come under observation before. These were subsequently classified by Mrs. Hy. George, and added to our valuable list of plants of the Red Deer district.

BOTANICAL SPECIMENS ADDED TO LIST DURING SUMMER OF 1921

Giant Hyssop (*Hyssopus anethiodorus*).
Grape Fern (*Botrychium virginianum*).
Moon Wort (*Botrychium lunaria*).
Small Coral Root (*Corallorhiza innata*).
Yellow Coral Root (*Corallorhiza ochroleuca*).
Large Coral Root (*Corallorhiza maculata*).
Chickweed (*Stellaria media*).
Narrow-leaved Collomia (*Collomia linearis*).
Snake Root Sainsle (*Sanicula marilandica*).
White Avens (*Geum alba*).

The members of this society who are honorary bird wardens, under the Migratory Birds Convention Act, have been pleased to note, especially amongst the young folk—a more intelligent and kindly interest in our “Feathered Friends.”

The co-operation of sportsmen and the assistance of teachers and parents in the protection of game birds and wild fowl, during the breeding season, is needed, if we are to receive the full benefit of this valuable legislation.

At the second fair, held by the Red Deer School Fairs Association, the society again offered prizes for exhibits in the following classes: Collection of Insects, and Collection of Plants. Some good exhibits were shown, and were judged by Mrs. Hy. George.

The society's usual grant for prizes in children's classes was given to the Red Deer Horticultural Society.

Two of the members were again invited, by the University of Alberta, to assist in the University Extension work—Mr. F. C. Whitehouse and Mrs. W. A. Cassels. Unfortunately, neither was able to accept the invitation.

By the invitation of the Women's Institute at Wetaskiwin, Mrs. Cassels gave a paper on her “Observations of Our Familiar Birds.” This paper was very much appreciated.

SECRETARY-TREASURER'S REPORT FOR YEAR ENDING NOV. 30TH, 1921

The fifteenth annual meeting of the Society was held in the Public Library at Red Deer, on November 26th, 1920, at 8 p.m.

The afternoon session, to which the public were invited, was held in the Lyric Theatre, Red Deer.

At the afternoon session, a number of interesting films of Natural History subjects were shown, followed by a lecture on Modern Research in Botany, and its relation to a Natural History Society, by Professor F. J. Lewis, of the University of Alberta. The evening meeting was presided over by Mrs. W. A. Cassels. The following annual reports were read and adopted :

Executive report; secretary-treasurer's report; first annual report of the Medicine Hat Branch; an entomological report received from Mr. E. H. Strickland, of the Entomological Laboratory, Lethbridge.

Following the reading of these reports, several members gave some interesting notes on birds and animals observed during the season.

Officers for the year 1921 were elected as follows: Hon. President, The Hon. Duncan Marshall; Hon. Vice-President, Mr. J. J. Gaetz, M.P.P.; Hon. Vice-President, Mr. H. A. Craig; Hon. Vice-President, Mr. F. C. Whitehouse; President, Mr. C. H. Snell; Vice-President, Mrs. W. A. Cassels; 2nd Vice-President, Dr. Henry George; Directors—Mesdames George, and G. F. Root; Messrs. S. Pameley, F. S. Carr, D. Mackie, W. A. Cassels, H. R. Oram, K. Bowman and W. F. Harris.

Secretary-treasurer, Mrs. S. Pameley.

During the year 1921 nine meetings were held, and one Field Day.

The special papers discussed during the year were: Observations of Bird Life at Sylvan and Gaetz Lakes, by Mrs. W. A. Cassels; A Canoeing Trip North and East of Edmonton, by Mr. F. Farley; Geological Paper, by Mr. R. G. Dawd; The Cave Men of Devon, by Mr. C. H. Snell; Our Familiar Birds, by Mrs. Cassels.

A very successful Field Day was held on July 13th, the northern shores of Sylvan Lake having been selected for the occasion. Fourteen new members have joined the Society during the year.

Respectfully submitted,

H. W. PAMELEY,
Secretary-Treasurer.

Appendix to the Report of the
Live Stock Commissioner

HORSE AND CATTLE SHIPMENTS

Shipping Point	INSPECTOR	HORSES			CATTLE							
		Local	Export	Total	Male	Female	Calves	Yr 'lings	Mature	Local	Export	Total
Acme . . .	W. Hotsenpillar . . .	189	58	247	1,029	908	516	22	1,399	1,690	247	1,937
Airdrie . .	L. Farr, H. Blankley . .	65	152	217	697	695	312	129	951	1,368	24	1,392
Alderson .	G. M. Thompson . . .	271	28	299	29	42	12	9	50	70	1	71
Alliance . .	C. A. Hogan and L. K. Cranmer . . .	16	5	21	75	157	...	...	232	...	232	232
Anisk . . .	P. W. Harrison . . .	28	32	60	254	186	72	19	349	291	149	440
Ardenode .	A. Jensen . . .	...	...	...	307	239	126	13	407	546	...	546
Ardley . .	T. Hampton . . .	...	...	...	105	85	32	35	123	190	...	190
Athabasca .	A. Archambault, P. W. Shepherd . . .	...	...	...	61	30	5	3	83	91	...	91
Athabasca .	G. Devlin . . .	2	...	2	27	25	1	...	51	52	...	52
Ardrossan .	W. Seymour, W. C. Wardrop . . .	7	3	10	171	48	13	...	206	219	...	219
Alhambra .	Roy Addy . . .	...	...	...	20	9	...	5	24	29	...	29
Atlee . . .	E. Hay . . .	271	72	343	280	198	6	1	471	161	317	478
Alix . . .	H. G. Finch . . .	23	25	48	1,107	489	84	31	1,481	564	1,032	1,596
Ankerton .	H. J. Bronson . . .	...	...	...	112	87	110	...	89	199	...	199
Aldersyde .	W. B. Way . . .	29	...	29	236	4	...	...	240	65	175	240
Beiseker . .	F. Lount . . .	22	8	30	694	796	315	146	1,029	1,465	25	1,490
Bashaw . . .	J. C. Windsor, G. F. Grant . . .	...	...	...	...	...	...	...	...	...	...	...
Bassano . .	W. J. Brogan . . .	78	4	82	813	654	332	71	1,064	1,467	...	1,467
Blackfoot .	W. J. Truscott, . . .	245	77	322	684	353	6	64	967	666	371	1,037
Benalto . .	W. A. McKee, A. Kinna . . .	21	10	31	171	74	3	...	242	4	241	245
Bindloss . .	G. E. Chudleigh C. F. Debolt . . .	54	...	54	232	68	...	12	288	272	28	300
Bittern Lake	O. H. Toreson . . .	...	...	...	106	24	...	...	130	87	43	130
Blackie . .	F. Rockafellow . . .	2	...	2	318	296	...	32	417	555	59	614
Blackfalds .	J. Capron . . .	192	2	194	1,083	775	196	3	1,659	1,858	...	1,858
Bon Accord .	H. A. Whittaker . . .	...	...	...	69	51	12	2	106	120	...	120
		...	...	...	219	150	6	7	356	369	...	369

Botha	D. O. Kierbow	10	39	10	453	315	109	33	626	575	193	768
Bowell	J. DeLinks	8	15	47	10	15	1	5	25	25	4	25
Bow Island	John Martin	21	36	36	74	85	89	105	153	155	253	159
Bowden	R. McCue	29	3	32	945	493	89	105	1,244	1,185	253	1,438
Brooks	N. Stafford and A. L. Young	291	107	388	453	394	103	15	729	515	332	847
Bruce	R. L. Summers	40	19	59	487	391	33	1	844	785	93	878
Bawlf	K. O. Eggen	18	7	18	405	272	68	31	578	636	41	677
Brant	C. D. Holmes	154	7	161	514	596	87	31	1,110	992	1,110	1,110
Bellis	G. Woder	154	7	161	393	201	41	41	553	594	10	594
Burdett	G. Lomas	154	7	161	5	29	4	4	30	24	10	34
Bruderheim	E. Schoen, S. E. Batson	154	7	161	220	197	177	2	238	417	417	417
Bearberry	C. Cressman	154	7	161	35	18	177	2	49	53	118	53
Compeer	H. C. Barrick	16	23	39	68	51	119	4	119	81	833	119
Cadogan	J. McCartney	29	20	49	640	274	32	27	855	136	10	914
Calgary	H. C. McMullen	1,638	1,111	2,749	20	126	15	2	129	26,738	45,949	146
Calgary	M. Sexsmith	951	257	1,208	43,990	28,697	8,708	436	63,543	17,379	5,722	72,687
Calgary	G. Roy, J. H. Johnson	2	5	7	13,435	9,666	6,443	14	16,658	460	284	23,101
Camrose	C. S. Bailey	22	5	22	541	203	93	28	637	342	342	744
Camrangay	F. Teskey	143	5	148	181	161	56	28	258	57	57	342
Carvel	R. C. Howat, F. Bosworth	5	5	5	28	29	5	5	52	57	57	57
Carstairs	D. M. Eby, N. C. Beckner	175	10	185	1,786	1,083	425	248	2,196	2,139	730	2,869
Castor	T. C. Morgan and A. F. Masker, Dep.	73	10	83	914	559	143	29	1,301	780	693	1,473
Cayley	L. Beaton	9	9	9	4,252	2,181	268	1	6,164	3,282	3,151	6,433
Champion	F. C. Alcock	61	61	61	213	248	20	4	437	461	350	461
Chauvin	A. E. Keith	62	62	62	307	92	37	13	386	49	350	399
Cherhill	W. J. Stromquist	2	3	5	259	144	37	22	344	403	41	403
Chigwell	A. Burnett	107	52	159	83	61	19	11	114	103	41	144
Coronation	E. J. Gibson, F. Hood	107	52	159	1,250	766	66	47	1,903	1,130	886	2,016
Clive	H. Tiltz and H. M. Illsley	20	12	20	489	425	143	58	713	672	242	914
Cluny	D. Clark	50	12	62	223	204	47	9	371	391	36	427

HORSE AND CATTLE SHIPMENTS—(Continued)

Shipping Point	INSPECTOR	HORSES			CATTLE							
		Local	Export	Total	Male	Female	Calves	Yr'lings	Mature	Local	Export	Total
Cochrane	C. Mickle and C. Capithorne, Dep.	299	347	646	2,905	1,538	397	171	3,875	2,457	1,986	4,443
Carolside	W. J. Scrivens	11	...	11	31	90	6	21	94	107	14	121
Coleman	J. Plante	27	10	37	12	34	2	5	39	31	15	46
Colington	N. O. Jack	18	...	18	110	57	6	4	157	167	...	167
Consort	V. M. Sherbino	21	5	26	267	163	33	38	359	402	28	430
Craigmyle	T. DePersier, D. A. Munro	31	9	40	413	289	50	31	621	642	60	702
Crossfield	A. W. Gordon	70	23	93	1,702	979	508	72	2,101	2,412	269	2,681
Clyde	J. M. Salsbury	7	...	7	165	111	33	7	236	276	...	276
Claresholm	J. M. Workman, E. Clark, L. Stebbins	41	56	97	421	166	118	4	465	384	203	587
Cardston	G. Triplett and P. C. Parker, Dep.	32	...	32	2,711	954	277	18	3,370	476	3,189	3,665
Cowley	E. LaBrie	...	46	46	121	117	18	...	220	144	94	238
Coutts	A. J. Verburg, C. Hanskin	47	20	67	201	27	5	3	220	183	45	228
Clairmont	W. J. Goldsworthy	2	...	2	317	167	...	...	484	484	...	484
Chipman	G. H. Rice, W. Landers	10	4	14	1,563	826	430	8	1,951	2,244	145	2,389
Claymore	G. D. Dunsmore	...	...	...	20	2	...	...	22	...	22	22
Cessford	R. D. Dunsmore	17	54	71	39	33	10	12	50	58	14	72
Cavendish	W. Roetter	6	48	54	37	16	...	3	50	9	44	53
Cairns	F. Burton	8	...	8	44	5	2	...	47	8	41	49
Czar	C. Houcher	5	92	97	425	136	31	...	530	90	471	561
Daysland	J. Berry, A. J. Moore	25	8	33	356	357	242	17	454	699	14	713
De Winton	T. Dalzell	32	8	40	238	190	126	46	256	428	...	428
Didsbury	W. F. Sick	160	27	187	1,334	1,001	406	121	1,808	2,189	146	2,335
Dinant	W. R. Porter	3	...	3	47	44	52	3	36	91	...	91

Donalda	12	..	12	535	416	241	17	693	906	45	951
Duffield	8	..	8	99	73	..	3	169	172	..	172
Dunsmore Jct.	198	357	555	435	345	31	11	738	108	672	780
Dalroy	59	..	59	420	219	77	16	546	639	..	639
Delia	..	..	..	..	..	..	..	..	..	..	..
Deville	34	..	34	518	397	78	58	779	872	43	915
Duchess	10	..	10	18	17	3	1	31	35	..	35
Delburne	..	104	104	590	120	9	..	701	81	629	710
Drumheller	27	3	30	473	295	67	51	650	762	6	768
Dalemead	93	63	156	193	146	15	8	416	439	..	439
Darwell	8	..	8	348	204	25	10	517	552	..	552
Edmonton	..	..	..	49	20	5	..	64	69	..	69
Edmonton	460	26	486	29,975	18,047	4,684	99	43,239	30,406	17,616	48,022
Edmonton	11	..	11	1,900	1,050	89	..	2,861	396	2,554	2,950
Eckville	1,299	316	1,615	160	494	117	11	526	584	70	654
Edberg	12	4	16	78	34	..	..	112	108	4	112
Edgerton	21	..	21	87	86	6	..	167	173	..	173
Egremont	39	33	72	772	599	134	17	1,220	442	929	1,371
Elnora	..	..	..	14	8	..	..	22	22	..	22
Empress	9	..	9	670	336	73	69	864	1,006	..	1,006
Erskine	90	76	166	1,063	810	169	402	1,302	578	1,295	1,873
Etzikom	49	..	49	969	595	312	37	1,215	752	812	1,564
Enilda	27	..	27	28	21	4	1	44	49	..	49
Enchant	10	..	10	122	50	10	3	159	172	..	172
Excel	17	8	25	20	18	6	3	29	38	..	38
Ferintosh	3	21	24	56	45	17	..	84	98	3	101
Fleet	29	1	30	146	106	35	25	192	243	9	252
Forestburg	15	8	23	171	151	67	16	239	251	71	322
Fort Saskatchewan	23	3	26	448	238	111	18	557	625	61	686
Fabyan	8	3	11	484	348	146	10	676	831	1	832
Gadsby	1	..	1	14	9	..	..	33	8	25	33
Gainford	51	32	83	1,307	930	349	121	1,767	1,457	780	2,237
	..	..	..	82	29	2	5	104	111	..	111

HORSE AND CATTLE SHIPMENTS—(Continued)

Shipping Point	INSPECTOR	HORSES			CATTLE							
		Local	Export	Total	Male	Female	Calves	Yr'lings	Mature	Local	Export	Total
Galahad	M. Kueffer	8	...	8	318	169	30	29	428	446	41	487
Gleichen	T. Henderson	375	7	382	1,691	1,180	202	38	2,631	1,331	1,540	2,871
Grainger Station	J. McLeod	39	...	39	409	180	76	34	479	589	...	589
Grand Prairie	S. J. Dunlop	43	4	47	291	111	...	14	388	390	12	402
Gwynne	G. A. Beavo	...	...	...	78	77	66	...	89	155	...	155
Greenshields	C. F. Gibson	...	...	...	13	9	...	...	22	...	22	22
Grouard	L. Hislop	10	...	10	122	50	10	3	159	172	...	172
Halkirk	W. L. Fulton	57	...	57	1,319	754	451	38	1,584	1,222	851	2,073
Hanna	N. Green	...	...	...	...	...	...	...	...	...	...	...
Hespero	P. E. McCullough	128	145	273	300	254	24	64	466	519	35	554
Hussar	G. H. Macdonnell	...	...	...	70	29	3	23	73	99	...	99
Hughenden	J. H. Dundas	8	...	8	176	554	45	...	685	585	145	730
Huxley	T. A. Hall	34	...	34	167	142	38	8	263	111	198	309
High River	L. A. Cady	10	2	12	709	354	164	28	871	978	85	1,063
High Prairie	W. J. Irving	219	90	309	1,128	1,045	352	99	1,722	2,094	79	2,173
Holden	C. S. Spaulding	10	...	10	154	76	39	...	191	230	...	230
Hardisty	A. G. Brown	...	1	1	892	538	151	28	1,251	1,288	142	1,430
Heiser	A. W. Dickson	9	4	13	466	177	2	12	629	514	129	643
Haynes	J. Buckland	4	...	4	684	488	351	1	820	1,027	145	1,172
Iddesleigh	C. A. Bucknell	...	...	...	14	1	...	...	15	15	...	15
Innisfail	C. W. Smiley	5	...	5	41	61	...	...	102	78	24	102
Innisfree	E. Olsen	125	14	139	1,537	704	146	83	2,012	1,753	488	2,241
Irma	W. J. Pendergast	3	...	3	677	220	164	9	724	374	523	897
Irvine	W. B. Peterson	10	6	16	171	84	19	21	215	249	6	255
Islay	O. Bettige	10	175	185	124	61	...	10	175	50	135	185
Irricana	J. Pollack	23	25	48	1,107	489	84	31	1,481	564	1,032	1,596
	J. T. Fyfe	55	2	57	198	157	57	...	298	176	179	355
	W. Marshall	...	...	...	...	...	...	...	...	...	...	...

Jenner	163	80	243	667	267	46	21	867	529	405	934
Jarrow	65	25	90	190	105	66	20	209	265	30	295
Keoma	56	..	56	235	133	85	..	283	265	103	368
Kingman	12	..	12	149	99	7	..	241	248	..	248
Kitscoty	142	134	276	1,359	630	141	..	1,848	321	1,668	1,989
Kelsey	34	..	34	203	113	81	4	383	316	..	316
Kitriemuir	11	..	33	282	160	56	3	702	402	..	442
Killam	68	..	68	537	268	96	7	453	681	124	805
Kinsella	2	38	40	407	222	170	6	584	629	..	629
Kathryn	..	..	..	368	239	14	9	..	607	..	607
Lacombe	96	125	221	710	721	126	30	1,275	1,140	291	1,431
Lamont	8	..	8	868	726	484	16	1,094	1,588	6	1,594
Leduc	41	21	62	892	738	147	54	1,429	1,595	35	1,630
Lethbridge	89	198	287	394	262	45	23	588	426	230	656
Legal	..	..	..	13	29	11	7	24	42	..	42
Lomond	31	27	58	22	13	2	2	31	15	..	35
Lousana	11	..	11	487	454	105	33	803	705	236	941
Loyalist	33	18	51	17	28	2	5	38	45	..	45
Langdon	110	..	110	689	496	129	56	1,000	1,077	108	1,185
Lundbreck	..	..	..	..	..	..	..	..	..	..	..
Lloydminster	87	43	43	682	267	407	..	542	465	484	949
Lake Louise	33	131	218	2,721	1,714	233	89	4,113	819	3,616	4,435
Lyndon	189	32	65	..	4	..	..	4	..	4	4
Long View	29	..	189	1,313	1,226	85	46	2,408	2,539	..	2,539
Lea Park	..	..	29	158	127	6	21	258	285	..	285
Macleod	66	..	..	77	90	24	15	128	167	..	167
Manville	90	76	142	166	56	17	12	205	160	62	222
Manyberries	..	..	90	1,115	595	72	..	1,626	635	1,075	1,710
Medicine Hat	62	31	93	119	110	..	1	228	229	..	229
Metiskow	379	294	673	39	108	23	3	121	137	10	147
Midnapore	49	20	69	201	141	49	10	283	115	227	342
Millet	19	5	24	60	3	..	..	63	60	3	63
Mitchell	22	5	27	464	244	76	59	573	704	4	708

Ponoka	100	100	1,568	983	408	34	2,109	2,308	243	2,551
Provost	13	3	405	137	65	5	472	96	446	542
Purple Springs		19	34	44	28	3	47	78		78
Phillips	7	7	70	31	9	1	91	96	5	101
Pincher Creek	90	112	1,530	446	201		1,775	164	1,812	1,976
Priddis	841		309	335	24		620	644		644
Pollockville	17		109	37	3	4	139	146		146
Ranfurly	16	30	329	148	30	12	435	405	72	477
Raymond	17	110	95	55	9	7	134	78	72	150
Redcliff	69	88	57	62	5	13	101	72	47	119
Red Deer	116	3	694	521	40	45	1,130	1,142	73	1,215
Redlands										
Retlaw	146		451	475	51	1	874	926		926
Richdale	37	85	12	44	9	6	41	56		56
Rockyford	59	191	263	203	32	22	412	195	271	466
Rosebud	144	139	444	188	71	17	544	572	60	632
Round Hill	1		71	69		19	121	140		140
Rumsey		4	261	176	17	47	373	436	1	437
Ryley	47	28	398	347	182	17	546	745		745
Rowley	3		667	341	120	11	877	1,008		1,008
Redwater	40		272	251	41	39	443	523		523
Ribstone			13	17			30	30		30
Radway Centre	6	1	73	32			105	13	92	105
Rosalind	7		102	66			168	168		168
Ronalane	14		258	271	142		387	529		529
Red Willow	76	23	764	95			859	163	696	859
Rochester	28	23	176	126	84	5	213	301	1	302
Robinson's Cr.			27	6		2	31	33		33
Sargudo	24		169	99	4	18	246	268		268
Seven Persons	10		50	34	3	3	78	84		84
			27	46	6		67	45	28	73

Travers	7	79	137	2,119	2	5	7	20	2,708	7	467	2,364	2,831
Vermilion	58	16	22	2,593	712	103	20	64	3,155	7	260	653	3,808
Vegreville	6	7	82	226	1,215	295	15	280	390	7	596	38	298
Veteran	75	16	16	709	277	41	19	926	390	7	596	2	5
Wabamun	16	32	97	709	277	41	19	926	390	7	596	2	5
Wainwright	65	29	120	354	236	12	1	577	106	7	484	590	590
Walsh													
Warner													
Westlock	8	1	9	1,007	86	3		1,090	1,093				1,093
Wetaskiwin	46		46	258	141	22	6	371	399				399
Whitla	114	95	209	1,960	1,291	270	155	2,826	2,219			1,032	3,251
Waskatenau	62		62	9	14	1	6	16	21			2	23
Wayne				176	134	23	6	281	310				310
Wrentham	277		277	70	56	1	1	124	126				126
Youngstown	17	64	81		3			3	3				3
		10	10	75	43			118	118				118
Totals	16,776	7,488	24,264	203,483	129,036	40,277	6,435	285,807	206,653		125,866		332,519

Index

	Page
Report of the Deputy Minister	7
Report of the Provincial Livestock Commissioner	10
Bull Sales	12
Horse Sale	12
Report of the Dairy Commissioner	15
Statistics	15
Creameries and Cheese Factories	18
Butter Marketing Service	19
Grading of Butter	21
Report of the Provincial Veterinarian	23
Report of the Seed and Weed Branch	28
Report of the Poultry Branch	32
Report of the Demonstration Farms	40
Report of the Supt. of Fairs and Institutes	43
Report of the Chief Game and Fire Guardian	49
Report of the Women's Institutes Branch	58
Report of the Crop Statistician	71
Report of the Recorder of Brands	81
Report of the College of Agriculture	83
Reports of the Schools of Agriculture—	
Olds	97
Raymond	117
Gleichen	124
Vermilion	137
Claresholm	142
Youngstown	157
Report of the Alberta Natural History Society	163
Appendix to the Report of the Livestock Commissioner	167
Appendices to the Report of the Crop Statistician	179

Appendices to the Report of the
Crop Statistician

STATISTICAL TABLE

Showing Analysis of Temperatures, Rainfall, and Sunshine, in relation to the Growing Season, and the Harvesting and Threshing Seasons, in Alberta, for a period of ten years, 1911 to 1920.

	Year	GROWING SEASON												HARVEST SEASON						PRODUCTION OF GRAINS				Year's Precipitation	Year		
		Temperature				Rainfall				Sunshine				Temperature		Rainfall		Sunshine		Average Bushels per Acre							
			May	June	July	Aug.	May	June	July	Aug.	May	June	July	Aug.		Sept.	Oct.	Sept.	Oct.	Sept.	Oct.	Wheat	Oats			Barley	Rye
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			Max.	Min.
EDMONTON 53° 33' North 113° 30' West Altitude 2,158 Ft.	1911	Max.	83	82	87	82	1.95	3.80	5.83	4.49	226	211	259	217	Max.	77	79	0.98	0.51	204	159	22.76	36.92	30.22		20.67	1911
	1912	Min.	24	34	40	33									Min.	20	11										
		Max.	86	89	82	81	2.35	3.03	4.76	4.41	251	312	192	200	Max.	78	74	1.12	0.73	190	150	22.89	36.72	27.76		20.18	1912
		Min.	29	32	35	35									Min.	22	15										
	1913	Max.	78	86	86	83	0.79	3.66	4.35	4.81	255	...	265	225	Max.	78	78	0.50	0.50	204	137	22.09	37.02	27.41	19.83	19.55	1913
		Min.	23	32	41	38									Min.	27	11										
	1914	Max.	78	84	84	85	1.81	8.53	3.24	2.52	278	207	316	295	Max.	78	67	2.94	1.07	153	156	24.57	34.79	29.87	19.71	25.29	1914
		Min.	29	39	40	41									Min.	29	23										
	1915	Max.	77	74	78	87	1.30	5.46	4.24	3.24	213	224	254	330	Max.	77	72	0.97	0.21	179	153	26.57	45.24	31.57	19.16	18.64	1915
		Min.	27	32	37	43									Min.	20	16										
1916	Max.	75	77	80	81	1.77	2.62	3.31	3.70	230	264	248	237	Max.	79	72	2.80	0.34	175	124	23.45	39.76	29.62	19.36	20.92	1916	
	Min.	27	29	38	32									Min.	29	20											
1917	Max.	79	80	86	80	0.90	1.72	3.15	2.77	232	309	350	271	Max.	82	76	0.41	0.67	204	122	23.93	26.12	22.99	16.97	15.25	1917	
	Min.	23	33	40	35									Min.	24	10											
1918	Max.	76	83	90	83	1.68	3.27	2.67	3.00	240	261	312	267	Max.	82	69	1.44	0.17	223	170	10.22	27.69	17.79	7.88	17.86	1918	
	Min.	21	31	29	36									Min.	27	7											
1919	Max.	88	89	87	87	2.85	0.87	2.41	0.95	277	308	283	275	Max.	76	67	1.40	2.28	182	117	30.75	34.16	33.50	24.76	16.43	1919	
	Min.	19	30	37	35									Min.	20	15											
1920	Max.	79	80	93	85	2.43	4.49	2.33	1.97	241	258	376	277	Max.	80	72	1.31	0.78	167	158	35.53	40.18	31.61	23.76	18.16	1920	
	Min.	29	29	43	34									Min.	24	15											
CALGARY 51° 2' North 114° 2' West Altitude 3,428 Ft.	1911	Max.	83	82	88	78	5.03	2.63	2.17	4.36	...	...	...	Max.	80	74	1.50	0.51	...	...	19.25	43.42	25.70	11.51	19.99	1911	
		Min.	26	36	33	33									Min.	18	14										
	1912	Max.	82	90	79	82	1.42	4.31	5.20	2.75	...	...	...	Max.	72	70	2.30	1.09	...	...	20.55	38.46	27.22	27.60	20.14	1912	
		Min.	28	29	33	30									Min.	25	15										
	1913	Max.	80	84	87	90	2.27	3.91	0.61	5.19	...	...	...	Max.	84	85	0.87	0.67	...	...	26.69	40.25	28.38	24.85	17.38	1913	
		Min.	19	38	38	38									Min.	30	11										
	1914	Max.	82	89	94	96	0.52	2.64	2.52	2.18	...	...	...	Max.	82	76	1.11	1.82	...	...	17.53	29.64	21.77	18.79	17.71	1914	
		Min.	22	31	42	36									Min.	30	22										
	1915	Max.	78	78	81	88	3.13	4.02	3.98	0.68	...	...	...	Max.	82	76	2.33	2.17	...	...	39.54	59.53	34.75	24.10	18.24	1915	
		Min.	31	35	38	46									Min.	24	26										
1916	Max.	74	82	87	85	3.10	1.46	1.49	2.03	...	...	...	Max.	80	74	0.84	1.20	...	...	28.12	45.16	30.85	21.33	13.91	1916		
	Min.	23	34	38	39									Min.	23	18											
1917	Max.	82	88	91	88	1.76	1.98	0.47	1.52	...	...	...	Max.	86	80	0.95	1.38	...	...	22.79	34.82	25.90	21.82	11.44	1917		
	Min.	22	32	34	34									Min.	30	7											
1918	Max.	78	90	94	93	1.34	0.26	1.35	2.54	...	...	...	Max.	84	74	0.97	0.11	...	...	10.22	20.32	11.40	16.29	9.12	1918		
	Min.	23	31	32	34									Min.	30	16											
1919	Max.	88	94	97	92	0.95	0.29	1.64	3.80	...	...	...	Max.	79	74	1.58	0.62	...	...	14.77	21.77	15.12	14.95	12.21	1919		
	Min.	20	27	41	41									Min.	22	7											
1920	Max.	76	86	92	92	0.91	1.34	4.94	0.09	...	...	...	Max.	86	84	0.33	1.49	...	...	30.75	42.62	29.53	25.67	14.42	1920		
	Min.	17	30	43	31									Min.	27	15											
LETHBRIDGE Altitude 2,928 Ft.	1911	Max.	90	89	91	85	2.32	4.62	2.33	4.04	199	296	329	261	Max.	81	79	3.98	0.57	213	187	20.26	44.01	37.44	21.67	22.16	1911
		Min.	26	39	41	31									Min.	25	9										
	1912	Max.	82	94	86	88	0.66	1.73	2.78	1.41	280	322	250	239	Max.	...	72	2.61	1.07	169	172	17.75	35.17	25.36	21.26	13.21	1912
		Min.	23	32	36	34									Min.	...	14										
	1913	Max.	83	86	89	92	1.70	4.70	1.29	1.93	233	...	345	321	Max.	89	78	1.65	0.50	278	152	16.95	32.00	26.45	16.67	14.17	1913
		Min.	19	39	38	35									Min.	26	12										
	1914	Max.	79	92	94	97	0.29	2.48	0.93	3.59	319	281	386	294	Max.	86	85	1.07	2.17	221	137	8.66	14.62	10.23	10.38	17.58	1914
		Min.	21	34	40	35									Min.	31	20										
	1915	Max.	78	79	87	93	3.03	4.84	3.44	0.96	230	226	290	334	Max.	81	79	1.32	0.96	161	180	39.29	53.86	38.05	28.66	17.40	1915
		Min.	28	36	36	45									Min.	20	20										
1916	Max.	77	83	89	84	3.77	3.54	3.33	2.97	230	244	336	307	Max.	78	76	4.76	2.85	208	169	29.36	49.32	37.19	23.19	25.88	1916	
	Min.	6	33	40	35									Min.	24	15											
1917	Max.	81	82	93	89	0.95	1.42	1.37	2.00	224	284	401	321	Max.	77	79	1.67	0.77	197	137	18.02	30.54	17.87	26.68	11.93	1917	
	Min.	16	31	38	35									Min.	20	6											

